STATEMENT OF REPEALS AND AMENDMENTS.

| S. I, PARA I, REFEALED IN PART SO PAR AS | |
|---|--|
| IT AMEETS COURTS-MARTIAL UNDER THE | |
| | 44 & 45 Vict, cap 58, s. 127 |
| SCHED. BEF IN PART | ACT X OF 1897 |
| Sa. 32, 41, 45, 57, 66, 91, 108, 126, 123 & 155 | |
| AMENDED | Act XVIII or 1872 |
| Se 15 4 55, 80, AMENDED | Act III of 1891, 8s. 2, 7 & 8, RESPECTIVELY. |
| Ss 37 & 45 amended | ACT V or 1899, as 2 & 3 (1) |
| NEW SECTION 125 SUBSTITUTED | Acr III or 1887 |
| NEW EXPLANATIONS SUBSTITUTED FOR Ex- PLANATION TO 8 14 | Act III of 1891, 8 1 (2). |
| NEW ILLUSTRATION SUBSTITUTED FOR ILLUS- | |
| TRATION(b) TO 8 14 | s 1 (3) |
| NEW SECTION SUBSTITUTED FOR \$ 54 | • 6 |
| PARAGRAPH SUBSTITLTED FOR PARA. 2, 8 80 | Acr \ or 1899, s 4 |
| EXPLANATION ADDED TO 8. 26 . | ACT III of 1891, s 3 |
| ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, | s 4 |
| ILLUSTRATIONS (e) A (f) ADDED TO 8 43 | ,, 8 5. |

The following changes have been made in reprinting -

PARAGRAPH ADDED TO 8 73

- (1) The amendments made by the Acts noted in the foregoing statement have been inserted (where possible) in their proper places with explanatory foot-notes:
 - (2) Some further foot-notes have been added for convenience of reference .

ACT V OF 1899. s 3 (2)

- (3) Section-numbers occurring in the text have been printed in figures instead of
- (4) The number and year of Acts referred to in the text have been noted in the
- (6) The headings to the pages have been amplified

CALCUTTA: COTTENUEST OF INDIA CENTRAL PRINTING OFFICE,

8, HASTINGS STREET.

INTRODUCTORY NOTE.

IN England foreign jurisdiction and extradition are wholly distinct subjects, having no point of contact. They are dealt with by distinct sets of statutes. The subject of foreign jurisdiction has been ably treated by the late Mr W E Hall in his Foreign Jurisdiction of the British Crown, and the subject of extradition is dealt with by Sir Edward Clarke in his well known treatise on the Low of Extradition.

But in India our external relations are mainly concerned with Native States under the suzerainty of Her Majesty, enjoying varying degrees of subordinate sovereignty. Their territories are interfaced with ours, and the questions of foreign jurisdiction and extradition are closely interwoven. A reprint of the British Indian Acts relating to these questions, with the addition of explanatory notes, may perhaps be useful to those who have to administer those laws.

By way of appendix I have added (1) the Statements of Objects and Reasons to the various Bills which have now become law, (2) an important letter from the Government of India to the Colonial Secretary, Straits Settlements, setting forth the general principles which regulate extradition between British India and the Native States of India, and (3) the provisions of the Prisoners Acts, 1871 and 1891, which provide for the transfer of prisoners from juils in Native States to British territory.

M D. CHALMERS.

CALCUTTA:

OFFICENMENT OF INDIA CENTRAL PRINTING OFFICE,

8, HASTINGS STREET.

CADMIUM.

Cadmium is imported into India as a drug.

CÆSALPINIA, Liene; Gen. Pla I., 565.

A grave of Lem, we was and of the Sub-Order Countrieses, continuing mome on species; in abstance of the traject of Lich homespheres. There are in

India none goe in years.

Rubod 1916 there, having, or wordy probly the bern. Leaves happy
along the planets. It were shown, yet has a report and in planets. It was a
long they had not conside. I they are problem, and the shows the desired
they they are do conside. I they repeating to many offerthe with a desired
that the system at maker than the others. Hanness to, free, declared
they they are made to the state of the system at the problem, and they were
they consider a sub-consider production of the system at the system at the state of the system at the system at the state of the system at the state of the system at the state of the system at the system at the state of the system at t

The genus was named after Andreas Casalphus, who was cluef physician to Pope Clemert VIII., in the latter part of the stateenth centure.

Czesalpinia Bonducella, Floring; Fl. Br. Int., II., 254.

THE PEVER-NET: PHYSIC-NET: NICEAR.

Syn.-Gestandina Bontecetta, Linn, G Bondec, W. & A.; Dale, & Gili, Bomb. Fl., 79, 10 fast.

Vem.—Relizaroj (or Jaistant), elsa latizarez, latilaria, latonij, latonij,

References—Rash H. Ind. 1-4 CB C. 351 Stewart's Ph. Pl. 69, Allianot's Him. Dirt. 720 Brandin, For Fl. 1597 Gamille, Man. Tim. 1521 Floram Ind. 64, 44, 45, 53 Gaden Sheriff, Suppl. Phorm Ind. 64 U. C. Phill. Blad. Met I lind. 314 Dimeck. Mal. Med M. 45 L. 154 Blades Kwa Frod. Paris Rab. Cal. 71 Dimec. Med. 144 Blades Kwa Frod. Paris Rab. Cal. 71 Dimec. Med. 147 J. S. Aynas Book Brag. 47, Year' I night, 794 Gardada Brades Budget Cylip, Ph. 185 Cylip, 74, 186 Blades Budget Steward Cylip, Ph. 185 Cy

13 2

C. 6

1

5

6

The Ferreral.

CÆSALPINIA Bonducella.

3

Cactus tree of the lower Himalara (referred to be some writers) is Ecoborna Revienna, Berline, which see

CADABA, Feet ; Gen Pla La 105

Cadaba farinosa, Icel , F. Br Iel, In 171; Carranter

In Murrays I arts and Drags of Sand the plant has been more trend, but is not not provide have not been described. It is terminant Sudandinthe Paris.

Caden, see Phonax er'renda, R al : Palan.

CADMIUM.

Cadmium a represedueto India as a drue.

CASALPINIA. Lat : Get Pla La st s

A grant of first ninite and of the Schill for Constraint of costs and not approve that faring the try of of high bone; firsts. There are in Inda some gor so epicons.

and home general persons are the county poully of others. Leave, large, despit lipopounds: I means the specific persons and for despit lipopounds. I means the specific persons are for despit despit delt with the L deceloration to have the bloom induced the force of the county of the specific persons are despited by the specific persons of the specific persons to t

The genus was named after Andreas Oxsalphous, who was clief physician to Pope Glement VIII, in the latter part of the sixteenth century.

Casalpinia Bonducella, Floring; Fl Br. Irl., II., 24

THE PERSONNET: PHYSIC-NIT: NICKAR.

Syn -Gullantina Bontucrita, Line, G. Borouc, B' & A., Dale

References - Rank FI for all CDC and Committee it at

dered very efficacious. ' (Mr T. N. Mukharji's Amst. Cat.) Drury

Leaves.

13

Te Ferrent.

CÆSALPINIA Ronducella.

eres that in Cock of the bases per end and as Adr I recent and distribute of the an est species of the president to the property of the second e may a sed amine mylante Dr Ch. Rice of one the aut e that with a sung frages are until in miner trent frame and if expeling er es ir st d'erms."

At the late Ciline at and for an Paking on a pult granging forted but was shown to the West Int to C Lie to a sent a ent from a special cultiand from of the great. The few chosen in let author take og all elastican or green. Seedle every Profit Co my at well at the Labis lift in the nema er of a glass, but an most cause as ernamental nuts unty

Chronical Composition - According to the medical reports at aded enexister. er in the Planen of mare force fiftel, Bend ; werb, and it Ten re the

rest of the first, is take a projection of the fact of the first of th the more of mer math mathe use to in the treatment ed interm ment feren.

" Ir critic grammen the chemical paraced the permit hed the screding emerous ref the timer a was grounding fan feet a sted with et et ty actifus Little aliched. The activity after the empreases of of the alichel, was gradealed from the authorization which did not grobe a proof tale. I then one of abone it the liquit a my letely seem no Ithe letter matter, and stelled it in the firm of an among hous white property, descul of all sine properties. It is sparingly a full to in water, but stadly in alleled forming arteriety thice wasternay an appreciate the native proceptated to tame, as do it produces a yellow their Inspection with concert's ted su'r ute acid, al ch acquires subsequently a sailet for. Notic a. d is notional transfert feffuerce. I tem these experiments, we may infer that the A time principle of the Bondur seculis a letter substance not pin trung back properticu" (ITa k. and Hant, Pharmac C. M. 212-19.)

Street Orizioze-1 "The kernel of the medicand delly toric and an' personal but much inferior in this respect to the cinchonal preparations. It is useful in dispensity practice where economy is a desideraturn." (Surgeon R. D. Murray, M.H., Burdwan) " Nata is decidedly artiperiolic, but feel 'e in its action, requiring 3 to 31 grs. of the positired seed to check an ordinary intermittent fevers. (Surgeon R. L. Dutt.)

14

REDICINE. 15

f.

CÆSALPINIA coriaria.

The American Sumach.

MEDICINE.

in intermittent fever and debility." (Brigade Surgeon J. II. Thornton,

tunued fevers, and also in asthma and general debity. Does 5; to 5; as an antiperiodic and antisparamodic, from 40 to 90 gersins as an antispretic, and from to to 30 grains as a tonic." (Henorary Surgean Motern Streng, Khan Bahadur, Trajticare, Madrau) "A cake made of 30 grains of the powdered kernel, the contents of one egg, and

This drug might prove very useful if its active properties were brought into a concentrated form as an extract or otherwise." (Surgen W. G. King, M. B., Madras Medical Det). "The nuts ground down and made into a paste are useful in dissolving glandular swellings, bulnes, and swellings."

Anderson, G. "Anderson, G. "Surgential Control of the Control

DOMESTIC. Necklaces, 16 Amulets. 17 Rosaries. 18

IQ

king into bracelets, neck-"Necklaces of the seeds

strung undahili abortion by child the nut sorcery, shore, t

Plants, No 4. P. 48.1

Dr. Oh. Rice writes to the author that "in the Malay Archipelago they are used for counters and playthings, especially in the game known as thoughts.

Cæsalpinia coriaria, Willd.

THE AMERICAN SUMACH OF DIVI DIVI.

Vern -- Libi-dibi, Boms; Amrique-la sumág, Duk.; Shimal, TAM:

The American Service

CASALPINIA CODADA

I Total to characted to the make on Tengeral Carles

11 101 1 11 1 1 0 =

Tank will be a new to deliver and house, with higher threat her unit the non-reservable a monthage name mate. The chief chance take must be nevel to suprese there negerned thee last ch P C C we take and a telephone what place to be truly also t neithers night ent I etc. est refrecests in greetimahane bornerates to a to teleminat hite net it to constat -in ter setter into the trag win and and any not requirate the sends; or to proportion the tieft path a tanning ten not extract. I other erthore for arms. See refered the minimate elanger, and would fore the effect of lower og the eligible of the get of the Recention large exgames I am etment of the posts has been seen to the Secretary of Sandalt fats the Dimby Government. The geno perment was accorded a second to the first the grant fats the first the first has plate to several corporate. will be tome to the The samples of the fam D sout of the mp at Leen tin fin comes on with the Calimal and the tan fish to in were prove incent far e fer etothe unales, is tobeta limit emailes. The taneers who sinced the lat " maculan lack at them, at a they professed them elses are so to short and were of the pateraid ared larke get lated, such

as Acada Careeria of A. Jenegylvin, and the posts of A. amblea. A combinal beam surface thereof they at the top states years, been taken in the advect of the letter data, see extreded cultivation of the David's in India. The I disang citizate from a new gandam on this solycity of their lyttle Commencer of Irdia, Revenue and Agricultural Digardness, may be agree dured from

fry, and r has now been thereightly accumated in South India, which, in solution of the control of the control

the Greenme

Ind a. But the new as in the summer and the triot in the stid weather are, unfortunately, very destructive to the symmy steedlings. The state there are should, in the first mixture, he seem in a nursery in May or jury, before the commencement of the ruiny, and the seedlings should not be transplanted unit.

weather to which North as king as the trees are glard system of urigati India the tree takes thre in a drier climate it wil TAY Feet, 20

Fowder. 21

Extracta. 22 The American Sumach.

corraria.

23

Cowncore Government Factory it is used as a substitute for sumach, which

se a dearer article. "The actual demand for Davidasi pods is not known. Findland imports about 4,000 tons every year, in addition to about 12,000 tons of sumach. But as Dividua is gradually outing the latter, its demand appears to be capable of great expansion. Lor the same reason I rance. which now annually imports more than live million kilorrammes of

muse in its cultivation is, that the tree requires no care after it · teiffing cost and for raising

meeting the

.

CULTIVATION -The information given in the above extract might be supplemented. The plant is, however, only being experimentally tried in India as yet, and considerable difference of opinion prevails as to the best methods for its cultivation, the nature of the soil most favourable to it, and as to the process ... I t' . g a commercial success. In Mr.

Botanic Gardens, the trees are urgest plantation of Divi-divi in

s were occording to Mr. J. B Carborn of Paramil and

t and makes

Dr. Bidie of Madras thinks the tree grows

Manual recommends its introduction in the salt-marshes of Australia. From the brief notice already given of a cosignment of the node from 17

The Caralpinia digyna.

C/ESALPINIA digyna.

watering till they have attained the height of 3 feet, after which no more care is necessary. The plant grows luxuriantly in a clayish calcareous soil, but very slowly in red soil, as I have observed at the Red Hills near

closely packed in bags; but to be really remunerative and to show conclusive results, experimental shipments should be tried on a much larger scale than has yet been attempted, and means of continuing the supply must be available, as manufacturers will not try expensive experiments unless with some certainty of being able to get more of the substance tested, in the event of success."

Medicine -- According to Dr. Bidie, the pods are astringent. The powder prepared from them is of a light-yellow colour and astringent

MEDICINE. 24

are markerable. It makes am Robert Cornish, F.R.C.S, stringent, antiperiodic, tonic. (Apothecary Thomas Ward, ing leather, and makes very as, Waltair, Visagapatam.) I use (Bomb. Gas, XV., Pt. I.

TIMBER. 25 26

Cæsalpinia digyna, Rottl.; Fl. Br. Ind., II., 256.

Syn.—C. OLEOSPERMA, Roxb., Ed. C B C , 356.

Vern -Vakeri-mil. HIND : Umil-kúchi, Beng.: Nunf gatcha, Tel.: Vakeri-chebhate, vákeri-mula, Bomb.; Sunletthé, Burm.

Habitat -A prickly tree of the Eastern Himálaya, Eastern and West-

ern Peninsulas, and Ceylon, Tan - Dr H McCann in he Il se and Tour of Dr wal co

TAN. 27

-(L. Liotard)

..

Oil -Roxburgh says that an oil is expressed from the seeds, which is used for lamps.

28 MEDICINE. **2**Q

| CÆSALPIN Sappan | |
|---|--|
| 30 | Cæsalpinia Nuga, Ait; Fl. Br. Int., II., 255. Syn — C PANGULATA, Roth, Fl. Int., Fd. C. R. C., 365; Wight, Ic., t. Ph. Dale and Gibt, Pam B. P., 20, Brealin, Fox. Fl., 187. Verm — Katswalllu in Rhedric Hort. Mal.; Dynawaril atteya, Sinen i, Salank, Burki, A decomath hange, Sunens, Sunen is Bahtat.— A scandent, armed shrub, common in Eastern Hengal |
| 31 MEDICINE. | poses are used also the roasted fruits, which have a latter taste. The finely- powdered lesses have also been administered to women immediately after |
| 32 | delivery as a tonic to the uterus. C. putcherrima, Svartz.; Fl. Br. Int., II., 255. Royb., Fl Ind., Ed C B C., 256. The Business Print. |
| medicine. 33 domestic 34 35 | Syn—Polycian Pulcurania, Linn. Vern—Anisharkard, Beng, Sans; Ra'nagan II, Kan.; Daungiot, Beng, Blen. Habital—An introduced plant, commonly occurring in nearly every garden throughout India; it forms a large elegant bush; remains in flower all the year; one variety is red and the other yellow. Medidae—The leaves, flowers, and seeds are largely used in native |
| DYE | |
| 36 | This was a said to be prepared from the roots (tarri), from the wood, from the BARK, of from all toeether, and the root is reported to afford a yellow doe. The bark of Bashinda recembas as said to be used as a root-sulphate of iron, to largely used in calco- |

The Sappan wood.

CÆSALPINIA Sappan.

printing, its price being about R12 a cut Chips of the wood steeped in water yield a red colour. This is intensified by alkalies Combined with turmeric and sulphrite of iron, it gives the colour known as Kalejas (or liver-colour, "lit de-rin") With indigo it gives (sausni) purple Sanpan colour, however, is not permanent, being formed through the presence of the soluble substance Brizilin Tannin and alum are used as mordants - ----2 of at m and an ample star

> Dye-tincture. 37

mixed with a solution of proto-sulphate of iron (hirakoshi) The resulting colour is a blackish grey. One seer of tairs and 2 chittacks of hirakosh (sulphate of iron) are sufficient to dye 60 yards of cloth 1 yard wide In the case of the wood, it is either cut into pieces or pounded and then boiled in water from 5 to 8 hours, 12 chittacks of bakam wood are boiled in 25 seers of water till to seers remain. The solution is put aside, and the same wood is again boiled in another 25 seers of water down to 10 seers. These two resulting solutions are then mixed up and allowed to cool. This is the process adopted in the Rijshahye District. To extract the dye from the BARK, it is boiled down till the solution attains the necessary consistency and tint

Mr Thomas Wardle, in his Report on the Dyes and Tans of India, 1887, says (page 21) that "the wood, used to a considerable extent in this Chip. .38

Gulal 39 MEDICINE.

Medicine -Ainslie says a decoction of the wood has the property y used as a dyé. tannic and gallic and later by the

Wood 40

(Surgeon-Major W Dymock, Bombay)

"It is supposed wn among native doctors as congested blood (home, bas, v1, 14) According to Dr. Irvine, it is used as an astringent in medicine (Mat Med, Patha, p 15)

is prescribed Professor author with of Sappan with potash, banum resin

num resin"

(I narmacographi i, Sc) Special Opinions - 4 "Has been used as an astringent tonic in atonic (Assist int Surgeon Bhugwan Das, Rawal Pindi, Panjab)

| CAJANUS | |
|--------------------------------|---|
| indicus | The Pigeon Pea |
| TIMBER. 41 | Structure of the Wood —Supwood white, heartwood red The wood takes a fine polish and does not with or creek. Weight from 52 to 61 libs per cubic flow. Weight from 52 to 61 libs per cubic flow. Plant in Bangilore |
| 42 | Cæsalpinia sepiaria, Rozb., Fl. Br. Ind., II., 256 THE MYSORE THORN |
| | Vetta.—Ures set ariu, reils handa aila, Ilivo I Phalesi, avan IJisee, Lan) kanda (Nashina), dadar (CittaNa), reine di Irian, dhari-li Isee, (Ravi) ánda, arlei, daghauri (Iliza), angad (V.1727), Ps. Chillera et chilire Itoun, Max, Hatingh Ach v. Sadyanda, Ilium References—Kanl., Pl. Ind., Ed. Ch., 377, Stewart P. P. 1. 62, Thinh. 1, 457, Cambe, Man Timb. 135 |
| LAC | Habitat.—A large climbing, prickly bush on the Himfiliya, and extending to Ceylon and Ava, it ascends to 4,000 feet in altitude Gum.—"Lac is gathered on this tree in Baroda" (Bomb Gaz, VII., |
| 43 TAN Bark 44 OIL | Tan —The bark is much used for tunning in the Konkan Oil.—"The young pod contains an essential oil" (Bomb Gas, XV. pt I. 65) |
| Pods 45 Medicine | Medicine —In Chumba the bruised leaves are applied to burns —(Stewart) |
| MEDICINE 46 DOMESTIC | Domast a figure attal or an array to 1 |
| 47 | |
| 48 | CAJANUS, DC, Gen Pl, 1, 541 |
| | one nati from h storic |
| | The generic name Cajanus is derived from the Malayan name for the plant (Kaljang) |
| 49 | Cajanus indicus, Spreng , Fl Br Ind , II , 217 |
| | Pigeon, No-eye (small form) or Congo Pea (large form), Dal or Cadjan Pea |
| | Syn — Cyrisus Cajan, Linn; Cajanus indicus, Spr., C flavus, DC.; C bicolor, DC |
| | Verm _ r · · · · · · · · · · · · · · · · · |
| | |
| | |
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| | |

| The Pigeon Pea | CAJANUS indicus. |
|--|--|
| 01, Bi3it's Mad Ram Prod, Paris Exh. Cat., 74, Di Field and Garden Grops of the N'-W. P. and Ou Athinion's Him. Dist., 600, Church's Food-grains of four, Cyclop., Ed., 1885, Smith's Dict., 320; Treasury | dh, Part II , 20; India, 160 : Bal- |
| The state of the s | |
| | |
| · r | • |
| | |
| igo into India. | |
| Properties and Uses— | ľ |
| | |
| Medicine.—The pulse is said to be easily digested and | i inerciore suit- i medicine, |
| Medicine.—The pulse is said to be easily digested and | |
| Medicine.—The pulse is said to be easily digested and | therefore suits medicine. |
| Medicine.—The pulse is said to be easily digested and | |
| Medicine.—The pulse is said to be easily digested and | |
| Medicine.—The pulse is said to be easily digested and | |
| Medicine.—The pulse is said to be easily digested and | |
| Medicine.—The pulse is said to be easily digested and | |

FOOD. Seed. 5I

N.-W. P. 52

of a higher yield than 7 maunds. The outlay on cultivation is about the same as that for millets.

In the North-West Provinces it has been calculated that there are 35k.



Calabar Bean

CALABAR bean

Professor Church, in his Food Grants of India, publishes more recent aralyses than the above, from which it would appear that the amount of pound

grans uns of out i

these

constituents in other species of pulse from the following table --

| Name | Nitrogenous matter | Starchy matter | Fatty or oily matter |
|--|--|---|--|
| Geer anetmen Cyamopus proralendes Bolches b forus Dolches to forus Dolches to tal tal Dolches to tal Trym Leries Glyene Soja Lathyrus saturus Thascolus account/olus Thascolus account/or Rose to tal Rose to tal Rose to tal Rose to tal Poum saturus Poum saturus Poum saturus | 15 05 to 21 23 27 % 23 c3 to 23 47 22 45 to 24 55 24 57 to 26 18 37 74 to 41 54 31 to 23 50 to 24 70 22 48 21 50 to 25 20 | 60 11 to 63 62 52 83 51 00 10 61 85 60 52 to 60 81 53 02 53 34 to 53 95 53 34 to 53 95 54 25 60 78 53 35 to 60 35 62 15 61 90 to 64 32 | 4 11 to 4 95 1 40 6 76 to 0 87 0 81 to 2 15 1 41 1 co to 1 92 12 31 to 18 90 0 95 0 64 1 11 to 1 48 1 46 1 32 to 1 12 |

(Baden Powell, Panjab Products, I , 243)

", quite equal It does not, ut produces

, Pubna)

(Surgeon

K D Ghose, Bankura | Professor Church states that the irritant and laxative character is greatly reduced by the grain being properly freed

FODDER 58 DOMESTIC. 59

remarks that "the stalks are used in the preparation of gun-powder in the Government works at Mazagon" (Bombay Products, 1862, page 17) Employed in the Bengal gun powder works for charcoal. (Balfour)

Cajuput Oil, see Melaleuca Leucadendron, Linn , MYRTACEZE

Calabar bean, see Physostigma venenosum, Balf , Leguminos E

*6 CALAMIIS The Andamanese Celamna andamanicus

CALARAR SKINS

Calabar Skins or SIBERIAN SOLIRREL SKINS.

Petitoris, Fr . Granwerk, Germ : VAOR VAIO, It : BIELKA, Rus

GRIS PEPUENO. SE

'n

The Schercan societels' skins are imported into India in considerable numbers. They are of vanous shades, and in India are used for caps, and shin lackets, and in Europe for making muffs, tippets, &c. See Souirrels Also under Furs

CALAMANDER WOOD

Calamander Wood - A beautiful kind of resowood obtained from 64 Cevion the timber of Diosperos cuesita, which see.

Calambac, sec Aquilaria Agallocha

CALAMUS, Linn ; Gen Pl. III. 021 60

A genus of pains, generally scandent, with long, thin, trailing stems, some-turies as much as foo feet in length. There are 200 species known, nearly all

The generic name Calamus is the Latin and the Greek Kahause. a reed or cane

For a more general and popular account of the genus, see under "Canes"

Calamus acanthospathus, Griff , Pl exe, fig 1; PALME 63 Reference .- Gamble's Man Timb . 422 Habitat -- Khásia Hills.

C. andamanicus, Kurz, For. Fl Burm , II., 519 64 Vern .- Chowdah, AND

References - Gamble, Man Timb , 424

Habitat-Met with in the Andamans Structure of the Wood,-Dr. Kurz describes it as "an evergreen TIMBER. 65 lofty, scandent, rattan-palm, the sheathed stems being as thick as the arm and the canes up to an inch in diameter."

| The Dragon's-Blood | CALAMUS Draco. |
|--|-------------------|
| Calamus arborescens, Grift, Pl. claxxvin. Vern—Danawa, dawla os sanda, theng, trenkanlyra, Russi References—Gamli, Man Timb, 411, Arrs, For. Fl., Burm, H., 516 Habitat—An erect, elegant case, often stolomicrous, met with in Pegu. | CANES. 66 |
| C. collinus, Griff., Pl. clxxvi.; Garible, Man. Tirib., 423 Habitat.—An erect came, met with in the Khásia Hills and in Upper Assam. | 67 |
| C. (Demonorhops, Mart) Draco, Welld, Blume in Rumphra, II., I. 131-32. The Dracon's Blood, Calants | 68 |
| Vetn.—Afrant, rengthere's damiels work, demodels haven, sold runn, hirdedis, little disken, skradulis hings, Mar (1905), Cittle, belangereng, Mata, Anniemergandiam, lam, Damielskenn flood of the looked demorphism lam, Damielskenn flood of the looked demorphism lam, lam, Damielskenn flood of the looked demorphism lam, lam, benefit for the stepmether. has repeated.—Park Filed Filed Filed Control of the looked demorphism lam, stepmether, cct. 51; G. ct. Oynard. Ent. Disk. Ent. Disk. Dobbe and Henderson, Lam, Journ, Nov. 1833. | |
| ook says: "The g annas to Ri py forests near and in Penang, Borneo. There are, however, two distinct forms of Dragon's blood—the modern and the ancient. | :} |
| Properties and Uses— Gum.—This gum is sold in dark-red triable masses, from which a blood-red powder is obtained; this is often met with in the bazar packed in the interior of canes. | GUM. 69 |

appears to be the refuse of this last process. It is perhaps doubtful

The fruits of C. Draco are clustered, each covered with beautiful imbricating scales, which are coated with a red resinous substance. The fruits are collected, placed in long bags, and violently shaken; the resinous

whether this article is procured from the plant by incisions."

Other species of Calamus also yield Dragon's-blood, and from incisions on the stem a resinous substance resembling Dragon's-blood is obtained from Dracema Draco, a tree of the Lillacem and a native of the Canary Islands. A famous specimen of this tree, one often referred to by writers!

| 10 | |
|-------------------|---|
| CALAMUS Draco. | The Dragon's-Blood. |
| CANES. | |
| Varnish 70 | |
| MEDICINE. | on paper, or has an earthy look on fracture. Medicine—Deacon's-Bucop—In the first mention we have of this drug it is spoken of as exported to the East from Arabia and Socotra. |
| l | |
| | |
| | the Arabs in the tenth century. |
| | |
| | Chiefly used as a colo concentration of the color of the |
| 72 | "Marringent, used as a dressing for ulcers." (Surgeon W. Barren, Bhuy, Cutch) |
| | Pract of Citical Visite presence of acetone, Toluol, C. H., (CH), H. (Dracoys), has tence in the drug of e hydrocarbons are |
| | portion yielded by the presence of benzoic alcohol, C. H. (CH, OH). C. 72 |

The Rattan

CALAMUS fasciculatus

As benzoic acid is freely soluble temored from the drug by that solven got traces of an 'amorphous red matte nothing crystalline Cinnamic acid, on according to Hirschooln [1877]. As to blue colour on addition of perchlorade o

contain phenol or pyrogallol rather than pyrocatectin "

"By boling Dragons blood with mittie acid, benote, intro-benzoie, and ovile acids are chiefly obtuned, and only very little piene acid Hlasswetz and Barth melied the drug with caustic potash, and found among the products the stormard acts.

Zoin yields sin

... unmants. They presume that the error of supposing the presence of benzo c and arose through condounding it with cinnamic acid or possibly from working with a resin in which benzo cacid had been formed by part all orudation. They established the chemical characters of four kinds of dragon's blood, the origins of two of which were authentic, namely—

Dragon's blood from Calamus Draco.—Is of a brick red colour, melts at 80° C., giving off highly irritating fumes, is insoluble or nearly so in cold cauthe odd ammonia, lime water, and sod um carbonate, but dissolves when boiled in these reagents. It may be represented by the

formula C, H, O,

Dragon s-blood from Draceaa Canabari—Is vermilon-coloured, melis at 80°C, group off aromatic irritating fumes, is ready soluble in cold caustic soda, arimonia, lime-waiter, and sodium carbonate. It may be represented by the formula C₁, H₁, O₁ (Pharm Fourn, 1883). This is probably the true dam ul akhwain of the Arabs, it occurs in tears covered with a dull red powder.

Calamus erectus, Roxb , Fl Ind , Ed CBC, 719

la!

Vern.-- 7 ---

Hal Foc cane as a

C extensus, Roxb, Fl Ind, Ed CBC 720

Vern -Dengullar Sylhet, Nelapoka Tel

References - Gamble, Man Timb 424; Drury s U P of India 96

Habitat.—Met with in Sylhet, and said to often attain a length of 600 feet. Extensively used in the northern Cachar and Manipur Hills for suspension bridges

Food -Seed eaten as a substitute for betel nuts

C. fasciculatus, Roxb , Fl Ind , Ed C B C , 721

Vern.—Bara bet Beng, Perambu, MALA TAM, Amla vetasammu, Tel Dutt gives Ambutetaza? (= a rattan growing in water) Sans but Dr Ch Rice informs the aution that this determination is incorrect

C 2

C. 77

CANES

FOOD.

73

74

75

FOOD.

76 77

ins rect 20

| 20 | |
|-------------|--|
| CALAMUS | The Rattsn. |
| CANES | and that the Sanskut name of this species is more l'kely to be Velra; Brandst, For Fl., 559, Gamble, Burm, 517, Balfonr, Cycl y. |
| 1 | Habitat -Met with on the plains and hills of Bengal, Orissa, Chitta |
| DOMESTIC 78 | |
| | guished from all the other species of Calamus by the direction of its clus- tered pinnules (resembling Zalacca) with spinous margins and keels. The male spikes are also shorter and broader than those of other species. |
| 79 | Calamus flagellum, Griff, Gamble, Man Tirib., 423 Vern — Robi bet, Nepal.; Reem, Lepcha; Nogagola bet, Ass Habitat.—Met with in Sikkim and Assam |
| 80 | C. floribundus, Griff , Pl execut , Gamble, Man Timb , 423 Habitat Met with in Upper Assam |
| 8 1 | C. gracilis, Roxb , H , Ed C.B C., 721. |
| | Verm.—Mopur bet, Urro, , Arapang, Maon; Hundl bet, Asa. Relecences —Großich, Pt esers, Gamble, Man Timb, 243, Drury Ureful Plants of India, 95, Aurs, For It!, Burm, 520, Thaules En, Crylon Pl, 330, Balfour, Cyclop Habitat.—Met with in Assam Chitagong, and South Ceylon |
| 82 | C grandis, Griff, Pl ccx, Gamble, Man Timb, 414, Kurz, II, 523 Syn - Damonorous grandis, hars (Fnum, 30) Vern - Rotang sumambo redung chry, Malacca |
| 83 | Habitat — Met with in Malacca and the Andaman Islands, stem about 2 inches in diameter C. Guruba, Mart Vera.— Kyeng nee kyeinni Bursi References — Gamble, Man Timb, 474; Aurs, For Fl, Burm, 522 Habitat — Met with in Chitigropg and Burma |
| 84 | C. Helferianus, Kurz, u, 521 (Enum, 39), Gamble, 424 Habitat — Met with in Tenasserim or the Andamans |
| 85 | C humilis, Roxb., Fl Ind., Ed C B C., 719 Reference — Camble, Man Timb., 423 Habitat — An erect cane of Chittagong |
| 86 | C hypoleucus, Kurz, For Fl, Burm, II, 523 Syn — Обмоноворся нуголенсис Китв (Епим 20) Reference — Camble, Man Timb, 424 Habitat — Met with in Tenasserim C 86 |

| | ALAMUS |
|--|--------------|
| | stersianus |
| Calamus mermis, T And , Garible, Man Timb , 424 Vern.—Dangri bet, Napal , Brool, Larcha | CANES. 87 |
| Habitat.—Frequent in Sikkim and Bhután Furnishes the finest alpen stocks | |
| C. Jenkinsianus, Griff, Pl. elxaxvi A, fig 3, Gamble, Man Timb 414, & xxx | 88 |
| Syd — Cimbospathes Jenkinsianus, Gamble Verd.—Golabel, Ass., Gallah, Cachar | |
| Habitat.—Met with in the Sikkim Terai, the Duars and Assam | () |
| C. latifolius, Roxb., Fl Ind., Ed CBC, 719 | 89 |
| Vern.—Aorak bet Chittagong; Sain, Magh., Ia ma ia, Burm References —Grafih Palms Br. Ind., 68, Pl. execus., Brands; For Fl., 500, Gamble, Man Timb, 423, 424, Aurs, For Fl., Burm, 518 | |
| tim the | 90 |
| thick as a walking-cane. | |
| C. leptospadix, Griff, Pl lexev A , Gomble, Man Timb, 423 Vetu.—Dangri bet, Nepal, Let, Lerena Habitat.—Found in Sikkim and the Khasia Hills | 9r |
| | i |
| C. longipes, Griff, ccii: A & B; Gamble, Ma . Timb , 424 Vern.—Gola bet Sundansunds | 92 |
| Habitat.—Dr King has identified this plant, proving the existence in India of a species hitherto supposed to be confined to Malacca | 1 |
| C longisetus, Griff, Palms, Br Ind , 44, Pl dixxxix A , Thwaites, En Ceylon, Pl 330 | 93 |
| Habitat.—An erect palm, very much resembling C. arborescens; met with in Pegu and Ceylon | } |
| C macracanthus, T And , Gamble, Man Timb , 424 | 94 |
| VernPhekori bet, Nepal, Ruebee greem, LEPCHA | ~ |
| C. macrocarpus, Griff, Pl clxxx VI A, figs 1 & 2, Gamble Man Timb., 423 | 95 |
| Syn.—C ERECTUS Roxò Habitat —An erect cane met with in the Bhután Duars | 1 |
| C. Mastersianus, Griff, Pl ecvi , Gamble, Man Timb ,424 Syn -C Guruba Kurs | 96 |
| Vern Sur di-bet quals bet, Ass Habitat Met with in Assam, and, according to Griffith, is the smallest cane in Assam, being less than half an inch in diameter | |
| the state of the s | l |

| CALAMUS Rotang. | The Rattan. |
|--------------------|--|
| GANES. | Calamus mishmiensis, Griff.; Gamble, Man. Timb, 423. Habitat.—Met with in the Mishmi Hills. |
| 93 | C. montanus, T. And ; Gamble, Man. Timb , 424. Verm.—Gamblet, Neral; Rev. Lerche. Habitat.—Found in Sikkim and Bhután. Vields the best cane for suspension-bridges, used also in Sikkim for dragging logs. |
| 99 | C. nutantifiorus, Griff, Pl. ecviii., Gamble, Man. Timb., 424. Habitat.—Met with in Assam. |
| 100 | C. palustris, Griff. Syn.—C Latifolius, Kurs, ii , 518 (Knum., 34). Habitat.—Met with in Mergui. |
| 101 | C. paradoxus, Kurz, 11, 521 (Enum. 40). Reference.—Gamble, Man. Timb, 422. Habitat.—Met with in Mariaban. |
| 102 | C |
| 103 | Habitat — Met with in Chitagong. C. quinquenervius, Roxb, Fl. Ind., Ed. C.B.C., 720. Vern.—Hurnur-gullar, Stinti. Reference.—Gamble, Man Tumb., 424. Habitat.—Met with n Stihet. |
| 104 | C. Rotang, Linn. (in part); Rexp., Fl. Ind., Ed. C.B.C., 720. THE RATIAN CARE. Syn.—C ROTSUNGHI, Graf. It seems probable that C. Retang, Linn., included originally more than one species; following Marting .: |
| | Habitat,—Met with in Bengal, Assam, South India, Burma, and in the hotter parts of Ceston. It delegates the control of the con |
| | bushes and trees for it to climb on. (Rozó) It flowers at the beginning of the rains and ripens during the cold season. |
| | C. 104 |

| The Rattan. | calamu tenuis, |
|--|------------------------|
| Fibre.—This is the species which yields the best and stoutest rutan canes of commerce. Other species are, however, used as substitutes it is split into strips and platted or wore into baskets, charrs, softs, and carriages. It is made into ropes, or is stretched entire across rivers, as the main supports of cane suspension-bindges. For further information | CANES FIBRE. 105 |
| see CAATS. | F00D. 106 |
| Calamus Roxburghii, Griff., Palms, Br. Ind., 55, Pl. cxu Syn.—C Rotano, Roxb (non Linn), Fl Ind., 720, Thwailes, En Gylon IV. 350. See C. Rotang, Linn., above. | 107 |
| C. Royleanus, Grif., Pl. caci Syn.—C. Rotano, Linn, in fart References.—Brandis, For. Fl., 559; Gamble, Man Timb., 423, Drury, U. Pl., ct. | 108 |
| Habitat.—Met with in Dehra Dun and in Northern Bengal C. rudentum, Lour. Vern.—Md-woirwi, Singir References.—Read, Fi Ind., Ed. C.B.C., 719 | 109 |
| Habitat.—A see a see the Malana and Carlo. Fibre.—D used by the people of Ceylon for roy do for plaiting beds, chairs, baske ! for bridges across streams and rundets " | 110 |
| C. schizospathus, Griff. ; Gamble, Man Timb , 423. Vern —Rong, Lepcha. | III |
| Habitat.—An erect cane, native of Sikkim and the Khásia Hills Structure of the Wood —Stem about 2 inches in diameter, with hard wood and closely packed fibro vascular bundles | TIMBER. |
| C. Scipionum, Lour; Brandus, For. Fl., 560 THE MALACCA CARE (See also under CARES) Habitat—A native of Sumatra and Cochin China The canes are largely imported into India, after having been smoked, a process which gives them their beautiful brown colour. Calamust, sweet, see Andropogon Schenauthus, A. 1117, | 113 |
| C. tenuis, Roxb, Fl Ind, Ed C.B.C., 721 | 114 |
| Syn.—C MONOIUS, Rob. F. Ind., Ed. C. B. C., 723 Vern.—Bandharn bet, CHITTAGONG, Kring, Macin, Yalla bet, Ass., Yali, References.—Gribh, Pl. cessus. Syn. Gamble, Man. Timb., 433, & xxx., Kurs, For Fl., Burm., 520, Thmatte, En. Colon Fl., 330 Habitat.—A monoceous clumbing cane, met with in Assam, Sylhet, Chittagong, Pegu, and in the hotter parts of Ceylon | |
| C. 114 | • |

21

Calf skins.

115

Calamus tigrinus, Kurz, For. Fl , Burm , 519

Vern -Leme, BURN , Amdah, AND Reference - Gamble, Man Timb , 414

Habitat.-Found in Burma and the Andamans

The Vernacular names given to Canes sent to the Paris Eshibition, the scientific names of which have not been determined.

Persons who have the opportunity of doing so may find it possible to ig with leaves and fruits so as s note fresh s as - --

savat and rolak, the first is

soonds, and gallah, from Burma

CALAVANCE.

116

Calavance.-Octonel Yule tells us that this name was once in common use in English, and may, perhaps, to this day be used at sea for a kind of bean, perhaps the Indian Vigna Catiang, or a species of Phaseolus The word comes from the Spanish garbansos, which De Candolle says is the Castilian name for Cicer acietinum (gram) See DeCandolle's Origin Cult. Plants, p 323.

Calcium, see under Lime; also Marble and Limestone,

117

CALENDULA, Linn , Gen Pl , II , 454

Calendula officinalis, Linn , Fl. Br. Ind , III , 257; Bot. Mag , t. 3204 : COMPOSITE

MARIGOLD

Vern.—Aklel ul mulk, sergul, saldhargh, Ps., Illat ta ya, Bunu "Aklel ul-mulk is Astragalus hamosus, a leguminous plant" (Assect-

ant Surgeon Sakharam Arjun Ravet, L. M., Girgaum, Bombay) References .- Stewart, Pany 65 Plants, 123, Balfour, Cyclon

Habitat -Found in the fields of the Panjab and Sind, scarcely indigenous, Peshawar (Astelisson) Stewart says it is collect ...

DYS 118

to t . y . . should more correctly be attributed to the genda, Tagettes patula Both plants are used as dyes and are often mistaken the one for

the other

the Tranciana

ov cows.

on. TIG FODDER. 120

n1_0~4- ~ . an oil.

Calf-skins, see Hides and Skins

Calicos or Calicut Cotton Goods.

CALICO.

CALICO.

Calico. Cotton cloth originally made at Calicut.

Vern.—Kapra, Hind; Tuni, Tan.; Gudha, Tel.; Kapin-kapar, Malay. The earlier writers speak of the cotion fabrics of India as "linens." When introduced to modern Europe they received the name of Calicos.

promise have the forest and the second secon

ties of England, it may be doubted how far the unprecedented success which rapidly ensued could have occurred. The time-honoured handlooms of India had then to give place to competition with the delicate and beauting the control of the Indian waver tied of the World migrated do

wave by wave piece goods an Indian market. goods and yari

But indications is feared over-competition has in Europe given birth in many cases to a depreciated article, and not in India only has the outery gone

ting not in the yarn trade only, but in the piece goods as well, and last

article produced at the very door of the factory. Economy of time and a

saving of two freights may yet work the same revolution in the cotton trade of India as has become an established principle in jute. For further information see Cotton and Gossphium.

CALICOPTERIS.

Calicopteris floribunda, Lam.; COMBRETACEE.

Syn — Getonia floribunda, Roxb , Fl. Ind , st , 428 Veta.— Kokorany, C. P. , Bandi, murududu, Tel. ; Marsada, boli, Misore.

C. 122

122

The Callicards.

123

CALLICAPPA

lanata

A large climbing shrub of Central and Southern India

Wood vellowish white, moderately hard, with numerous broad medullary natches of soft pub-like texture

Calisava Bark, see Cinchona Calisava: Rubiace.

CALLICARPA. Linn , Gen Pl. II. 1150

Callicarpa arborea, Roxb , Fl. Br Ind . IV . 567 , VERBYNACEE. Vern.—Ghiwala, dera, shiwali, Kumaon, Ghirala, Cutcii; Bormala,

D

Habitat .- A moderate sized tree with brownish, rough, grey bark, met with in Kumaon, Oudh, Eastern Bengal, and Burma; chiefly in second-

growth forests Medicine -The bark is aromatic and bitter, and is applied in decoction to cutaneous diseases

MEDICINE. 124 TIMBER. 125

n to cutaneous diseases (Surgeon W Barren, Bhuy, Cutch)
Structure of the Wood —Grey, moderately hard, even-grained. Annual rings visible Polishes beautifully, but is not used except for chargon

C. cana, Linn . Fl Br. Ind , IV., 468. 126

Vern -Aruska, CHITTAGONG References -Roxb , Fl Ind , Ed CBC , 131 , Royle, Fib. Pl , 3101

Balfour, Cyclos Habitat -A shrub of Bengal, common in forests and along road-sides in the Terai and Duars, extending probably southwards to the Ganges
Fibre—Royle, in his Fibrous Plants of India, says that a fibre is

FIBRE. 127

> Leve a comparate Library Rolked, with intie or no waste, &c." (Royle, page 311) Structure of the Wood.-White, soft Annual rings marked by a line

TIMBER. 728 120

C. incana, Roxb. Syn for C. macrophylla, Vahl. which see

C. lanata, Linn , Fl Br Ind , IV , 567

of closer pores

(C. cana), p 716, Balfour, Cyclop, Ed 1885

Habitat -A shrub of Western and Southern India and the Circars. Medicine —Ainslie says that this plant is reckoned by the Javanese amongst their emollients The bark, according to that author, possesses a C. 130

MEDICINE 130

| | LIGONUM |
|---|----------------|
| por | ygonoides ' |
| be 15 mm in | |
| skin diseases, they are very bitter" Food —"The bark, which is sub-aromatic and slightly bitter to taste, is chewed by the Singhalese instead of betel leaves" (Drury) | F00D. |
| Callicarpa longifolia, Lamk, Fl Br Ind, IV, 570 References —Rost, Fl Ind, Ed. CBC, 123; Brandus, For Fl, 5%, Auss, For Fl Bum, III, 75, C Cana, Bull Cat Habitat.—A shrub of the Malaya Peninsula, Penang, and Nicobar Islands, and core lanceolaria of Eastern Bengal, Khásia hills, Chittagong, and Burna. | 132 |
| C. macrophylla, Vahl, Fl Br Ind, IV., 568 | 133 |
| HENAB, Den mattranja, | } |
| BENG References Rosb , Fl Ind , Ed , C B C , 132; Brandus, For Fl , 508, Aurs, For Fl , Burm , 774, Gamble, Man Timb , 282, al o 283, Stewart Pb Pl , 165, Eaden Powell, Pb Pr , 571, Balfour, Gyclop | |
| Habitat.—A tall shrub of Northern and Eastern India, found as far north as Hazara, and ascending the Himalty at 0 6,000 feet, and abundant in Bengal. The Flora of British India establishes two varieties of this species— var griffithi from Bhután var suensis from Canara. Mediciné—§ "In Hazara the heated leaves are applied to rheumatic joints (whence the name be pattre, from bu, rheumatism)" (Surgeon-Major W D Streart, Cutlack) | medicine. |
| C. rubella, Lindl, F. Br. Ind., IV., 569 Vern.—Sugramát Lercha Habitat — A small tree of the North-East Himálaya to the hills of | 135 |
| Martnban C. vestita, Wall, Fl Br Ind, IV, 567 Syn.—C Lanata, Gambles Man Timbers, and Darjeeling List, non Linn | 136 |
| CALLIGONUM, Linn, Gen Pl, III, 95 | |
| Calligonum polygonoides, Fl Br Ind , V 22; POLYGONACER | 137 |
| 264 571, Balfour, Cyclop Habitat —A slow growing shrub of the and zone of Sind, the Panjab, | |

Habitat —A slow growing shrub of the and zone of Sind, the Panjab, and Rajputana, distributed into Afghánistan and Western Asia It

6

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ALLICARPA
                                        The Callicarns
  Innata
                 A large climbing shrub of Central and Southern India
                 Wood vellowish white moderately hard, with numerous broad medul-
             lary patches of soft with 1 ke texture
            Calisava Bark, see Cinchona Calisava: Rubiacez
                          CALLICARPA. Linn & Gen Pl. II., 1150
           Callicarna arborea, Roxb. Fl Br Ind. IV. 567, VERREVICER
   123
                    Vern .- Ghimala dera shimal . humany Ghirala Cutch : Rarmala.
                       Beng Bundun Kol ; Dum kotokor Santal ; Bogodi, gogdi Kitak
                    Ð
                Habitat -A moderate sized tree with brownish, rough, grey bark, met
              with in Kumaon. Oudh, Eastern Bengal, and Burma, chiefly in second-
              growth forests
                  Medicine -The bark is aromatic and bitter, and is applied in decor-
 MEDICINE
               tion to cutaneous diseases
   T24
                  6 'Tonic, carminative" (Surgeon W Barren Bhus, Cutch)
              Structure of the Wood - Grey, moderately hard, even-grained An-
nual rings visible Polishes beautifully, but is not used except for chargosl
 TIMBER
   125
            C. cana, Linn , Fl Br Ind , IV . 568
   126
                     Vern - Arusha CHITTAGONG
                     References - Roxb , Fl Ind , Ed CBC , 131 Royle, Fib Pl , 3101
                       Balfour Cyclos
                  Hat tot
                           Ach hof Rong 1 am
               in the
                  Fib
   FIRDE
               prepar
    127
               son re
               or core
               and ev
               (Royle, page 311)
                   Structure of the Wood -White, soft Annual rings marked by a line
  TIMBER.
               of closer pores
    128
             C incana, Roxb, Syn for C macrophylla, Vahl, which see
             C. lanata, Linn , Fl Br Ind , IV , 567
     120
                                                                           t. Ic , t 1736.
                                                                           Coat comul.
                                                                           or Fl 358
                                                                          flon Pl , 243,
                                                                           isbens
                                                                                  450
                                                                      L LADA, Dala &
                        Gibs Bomb Fl 200 non Linn, Dymock (C cana), p 716 Balfour Cyclop, Ed 1885
                                                                 Mat Med , W Ind
                   Habitat -
   MEDICINE
                   Medicine -
     130
                amongst their
                                                                                    35e
                C. 130
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| 2 12 11 11 11 11 11 11 11 11 11 11 11 11 | • |
|--|------------------------|
| | LLIGONUM ygonoides. |
| peculiar sub-aromatic and slightly bitterish taste, and may probably be found to have other medicinal virtues. The Milays consider the plant is a duretic. Drury mentions that in Upper Hindusian the root is employed in cutaneous affections. Dr. Trimen writes to the author that in Ceplom "the leaves, roots, and bark are used locally by the natives for | |
| romatic and slightly bitter to taste, betel leaves" (Drury) | F00D. |
| Callicarpa longifolia, Lamk, Fl Br Ind, IV, 570 References —Rath Fl Ind, Ed CBC 122 Brandis, For Fl, 379, Live For Fl Burn II 175 Cana, Wall Cat. Habitat.—A shrub of the Malaya Peninsula, Penang, and Nicobar Isaands, and car lanceolana of Eastern Bengal, Khásia hills, Chittagong, and Burma | 132 |
| C. macrophylla, Vahl, Fl Br Ind IV., 568 Syn.—C. Elcana Rozh C. Roeubenti, Il all, C. Cana, Gamble S. Dary Litt and Man Timbers, but non Linn Vern.—Pattharman be pattire, busing, little, Simili, Chevan, Den drass, Rank, Doga, simili, Avidaon, Mathara mattranja Blaca References—Rozh Fl Ind Ed., C.P.C., 133; Brandia, For Fl, 368, Autr For Fl, 168, Baden Foodil, Fo Fr, 571, Badjon, Cyriop Habitat—A tall shrub of Northern and Eastern Inda, Jound as far north as Hazara, and ascending the Himalay at 0 6 000 feet, and abundant in Bengal The Flora of Dark 1 f J | 133 |
| Medicine — natic joints (whence the name ba-pattra, from ba, rheumalism)" (Surgeon Major W D Stewart, Cuttack) | MEDICINE. 134 |
| C. rubella, Lindl , Fl Br Ind , IV , 569 Venn.—Sugramuk Lepcha Habitat.—A small tree of the North East Himalaya to the hills of | 135 |

Martaban

C vestita, Wall Fl Br Ind, IV, 567

Syn.—C LANATA, Gamble's Man Timbers, and Dargeeling List, non

m.—C Lanata, Gamble's Man Timbers, and Darjeeling List, non Linn

CALLIGONUM, Linn, Gen Pl, III, 95
Calligonum polygonoides, Fl Br Ind, V 22 J POLYGONACEE

Habitat -A slow growing shrub of the and zone of Sind, the Panjab, and Rajputana, distributed into Afghanistan and Western As a It

CALLITRIS quadrivatvis.

The Sandarach.

MEDICINE 138 FOOD. 130

has a pleasing appearance; its leafless branches and small pink flowers being in May succeeded by the small fruit

Medicine -The roots are bruised, and, boiled in combination with

Catechu (Kath), are used as a gargle for sore gums. (Murray.) Food - The flowers, when fallen, are gathered and enten as food by

the natives The abortive flowers are either made into bread or are cooked

with ghi or cocoanut oil TL 44 ...

Heartwood The branches

FODDER 140 TIMBER. IAI

CALLITRIS, Vent , Gen Pl , III , 424

Callitris quadrivalvis, Vent; DC Prod , XVI , 2, 452; CONIFERE. 142 THE SANDARACH OF ARAR (See Sandarac.)

Syn .- Thuis ARTICULATA, Vall

Vern -Sandaras, sandarach (resm), SIND, Chandrasa, MAR, Sundaras, Gui Sandarus, PERS

Guj Januars, IEAS
References - Plandat, for Fl, 535, Gamble, Man Timb, 394, U. S Dispens, 1144, Flückiger, Pharmatognast (Berlin, 1683), fp 94, Murray, Drugs CP 15 3nd 73, S Ayun, Bomb Drugs, 632, 1969s, fnsytop, 1684, 1684, 2012, Balfour, Cyclop, Ed 188; Smith, Economic Dict, 307, Kee Cat, 150 Habitat .- A large tree of the forests of Algeria, might be introduced

RESIN. 143

into India Resin - "The resin exudes naturally from the bark of the stem, but the common practice is to make incisions in the stem, particularly near

sha ha a h

poul oc. it is used for preparing the surface of parchment and paper to rece earling T lrug market is piece of paper

nay be written was shown at

MEDICINE 144

It consisted

clind birth (Murray) It was formerly given internally and used in the preparation of various ointments and plasters (U S Dispens)

Special Ofinions -5" Advantageously used in hæmoptysis, malena, and chronic diarrhosa, as an astringent" (Surgeon E IV. Satinge, Rajabundry, Godavars District) "It makes a good year the high to od (lin-

TIMRER **I45**

of the

C. 145

1 45 4 TICK brown

The Alexandrian Laurel.

CALOPHYLLUM inophyllum.

146

colour, and takes a most beautiful polish. The tree coppiers readily, and the forest fires which are lighted by the Arab herdsmen (as they are by the pastoral population of India) frequently kill the stem to the ground,

(Treasury of Botany.)

Calomel, Mercurous Chloride (Hg, Cl.), see Hydrargyrum and Mercury.

Calonyction speciosum, Chois., see Ipomœa bona-nox, Linn.; Con-

CALOPHYLLUM, Linn.; Gen. Pl., I., 175.

Calophyllum inophyllum, Linn.; Fl. Br. Ind., I., 273; Wight, Ic., 1.77, Guttifferk.

THE ALEXANDRIAN LAUREL.

Veta.—Sulána shanga, uppan, suppanta, undi, lline; Sultana champa, punnan, Ukura; Swanda, Buta; Felana, punnan, Ukura; Swanda, purreya, duggerfal [burraya, dugurfhort], undi, shinp; Udi, undi, llone; Uda; Utter]; Swena, undi, turbaha, Dac. Undi, undela, wundi, surangi, nag champa, punnag, undan Maw O.

punas, ponna, pumog surabunne or surago KAN, Punnaga, SAN SINGU PONNAGA

Locke, Gum & Gum reinni, 108; Cooke, Oils and Oil-seeds, 32; Birdwood, Bomb Pro., 13, 259, 278; Lisbon, U. Pl of Bond, 12, 214, Sports, Encycl. Balguer, Cyclop, Ed., 1825; Smith, Econ. Dic., 51; Treasury of Bolany.

Habitat.—Cultivated, especially near the sea-coast, throughout India as an ornamental tree; indigenous to the Western Pennsula, Orisa, South India, Geylon, Burma, and the Andaman Islands Distributed to Malay, Austraha, Polynesia, and Eastern Africa. In flower and fruit most part of the year, and thrives on dry sandy beaches where little else will grow.

History of Tacamahaca.—The name Tacamahaca has been indistrinstately applied to the resms of several plants, some of which have a doubtful existence, such as of Icca Tacamahaca, Elaphrum tomentosum,

147

CALOPAVLI IIM inophyllum.

> GUM 148

> > OIL. 149

The Alexandrian Laurel

Populus balsamufera. Calophvilum inophyllum. and Calonhvilum Calaba. true Tocamahaca from These are ger-" Tacamahaca orientale. Curacoa and nds of resin under the The United St sed to offerd one of name Tacama Products remarks that these. Birdwe it is stated that a resin exudes from the roots of this plant, and that this is the Tacamahaca of the Isle of Bourbon. He also quotes Lindley, who affirms that the true East Indian Tacamahaca is produced by Calophyl-- ---1 · car 713in f. . . C his Report on Gums and Resins, after reviewing the opinions on the subject of the supposed Indian source of this gum, says; evidence enhancially min a and folkely have commerce fi 4. . tildt it gives a yellowish green pleasantly-scented resin Pinnay, Pun, or Domba Dil.-The freeh and large quantity of fragrant dark green (... reports, even to 60 per cent, by a night year-in August and again in Februaty a ne on values in colour from greenish valles to dans odour wh It is use valued as tic affectio other part were exposition hiautas to the Straits and Ceylon, but it has now ceased to be an article of export" (O'Conor) In Tanjore 437 acres are said by Balfour to be under this tree, the yield of oil being 2,671 maunds, which fetches R20-4 a maund, and is sold at 4 to 5 annae 2 com.

C. 149

fact in conners and

The Alexandrian Laurel

CALOPHYLLUM polyanthum

C. 152

cooled below 500 Pinnay oil is extensively used in Travancore, especially for lamps, and is largely manufactured in the southern district Baba Nand Kishor Das, Deputy Collector, Pun, thus reports on the manufacture of oil as practised in Orissa — "The seeds being gathered an mante of the (to per cent fattributed to it by some writers, and as it is inferior to castor oil it is not I kely to me and a MEDICINE. 150 Special Opinions -6 "The leaves soaked in water are employed as an application to inflamed eyes, in the Archipelago " (Dr. Ch. Rice, New York) "The fixed oil obtained from the kernels of the seeds is said to cure scabes" (S executed to the seeds in the s cure scables " 15 ---to Hind rhages : ing for bark is t (Surgeor oil as an geon Ea TIMBER. ed 151 cat Ιt ları t clamanu wood (Baltour) Calophyllum polyanthum, Wall , Fl Br Ind , I , 274 152 Vern .- Kandeb, BENG , Kironli, NEPAL , Sunglyer, LEPCHA References -Kurs, For Fl , Burm , I , 95 , Gamble, Man Timb , 25 , Voigt, Hort Sub Cal , 87 Habitat .- An evergreen tree of Northern and Eastern Bengal, the

Khasia Hills, Chittagong, and Burma, ascending to 5,000 feet

CALOPHYLLIIM tomentosum

The Poon Spar

TIMBER. 153

Structure of the Wood.-Similar to that of C. spectabile Mr Chester of the Forest Department says it is used largely in Chitagong for masts, spars, and rafters, and sometimes in small boat-building and ennors

154

Weight from 38 to 40 lbs a cubic foot. Calophyllum spectabile, Willd , Fl Br Ind , I , 271 . Wight, Ic ,

1 128 & III

Sen .- C. MOONIL Bight, C AMENUM. Hall . C TETRAPETALI M. Rosh Vern .- Panto-ka kvandeo. Buru . Datar telade. And : saud to be known as Lal chuns in Hind cicicacco – Koto, Fl. Ind., Ed. C.B. C. 43°; hurs, For Fl. Eurm., I., 94, Gamble, Man. Timb., 25, Thwailes, En. Ceylon Pl., 52; Bedd., Fl. Syla., XYII References - Roth , FI Ind , Ed C.B C , 43° ; hurs, For FI Eurm , I ,

Habitat -A tall evergreen tree of Tenasserim and the Andaman Islands

Structure of the Wood -Light red, shining, cross-grained moderately hard Is used for masts and spars, also for planking, for which purpose it has lately been employed in building barracks in the Andamans

TIMBER. 155 156

C. tomentosum, Wight, Ic, 1 110. Fl Br Ind , I . 274

THE POON SPAR, SIRPOON TREE

Syn.-C ELATUM, Beddome, XXII & 1 2 Veru .- Pun sirpon Bons , Pun, pune, pungé Mala Ponge, Tau

Habitat .- A large, tall, evergreen tree, often growing to a height of 150 feet, met with in the evergreen forests of the western coast from Kanara southward, and in Ceylon, ascending to altitude 5,000 feet.

CIIM 157

Property and Uses-Gum.-Dr Dymock informs the writer that this tree yields a black opaque gum, which, in the bazar, occurs much mixed with meces of bark : it is feebly astringent, and very soluble in cold water. The solution is brownish yellow, exhibiting a strong blue fluorescence,

"If this gum is steeped in water for some time, the solution becomes very dark in colour. Alum, followed by carbonate of soda, throws down apparently some of the brown colouring matter without interfering with the fluorescence, since after precipitation the solution, although lighter in colour, is very strongly fluorescent A solution purified by alum in this way has its fluorescence immediately destroyed by acids and restored again by alkalies Examining its absorption spectrum it is found that while fluorescent the solution gives a broad absorption band at the violet end of the spectrum extending to about G, this band disappears on destroying the fluorescence by acids but reappears on the addition of alkalies. The solution of the gum does not appear to rotate polarised light The gum itself communicates only a very faint fluorescence to rectified spirit (Lyon) I am not aware of either of these gums having been applied to any industrial or medicinal uses but as they are collected by the natives, it is probable that they are supposed by them to have some medicinal virtues" (Dymock, Mat Med, W Ind , 2nd Ed , 87 88)

Oil -The seeds in Cevlon yield an abundance of oil known as Keena-It is probably used as a lamp-oil

DIL. 158 TIMBER. 159

Structure of the Wood.-Same as that of C. spectabile This tree affords the Poon Spars of commerce, these are much used for masts, and C. 159

The Swallow-worts CA often fetch large prices The timber is also used for building and

Calophylium Walkeri, Wight, Ic, t 45, Fl Br, Ind, I, 275 Syn.-C, pecipiers, Wight III, 1, 129

A single tree has been known to realize more than £100 (R1,000)"

References -Thrastes, En Cey'on Pl , 51, Cooke, Oils and Oil seeds, 32;

bridge-work

D

(Bomb Gaz , AV , 64)

CALOTROPIS

160

| Ballour, Cyclop Habitat.—A large tree, found in South India and Ceylon Od.—The seeds yield an oil, used for burning. C. Wightianum, Wall., Fl. Br. Ind., I., 274, Beddome, Flora Sylvat, 1 90, Wights III. I, 128, also Ie, 1, 106 Syn.—C. Synian Cans. and of Dravy, Us. Fl., C. Deciriens, Wight, Ir. 1 test (not of Theader) Vern.—Anthon, July Joune, India, Las Companies, patengh, Tan, Throughnum Mat., Chroping (as in Lisboa), Sarapuna (as in Dy- | 100 |
|---|--------------------------------|
| Habitat.—An evergreen tree of the Western Ghats, from the Kon- kan to Travancore Gum.—"The gum occurs in large, translucent, irregular lumps of a | 1 |
| , , | |
| <u>.</u> | OIL 164 Medicine 165 |
| Food —The fruit, when ripe, is red and sweet. It is eaten by the natives (Drury) Structure of the Wood —Hard, red. Beddome and also Lisboa say the timber is in Kanara much esteemed, and is valuable for engineering purposes | FOOD, 166 TIMBER, 167 |
| Calosanthes indica, Blume, see Oroxylon indicum, Vent , BIGNONIACEE | 1 |
| CALOTROPIS, R Br , Gen Pl , 11, 754 THE SWALLOW-WORTS A genus of ASCLEPIAPER COLLAINING only three species, these are inhabit ants of tropical Asia and Africa. Erect shrubs glabrous but with a hoary powder Leaves opposite broad, subsessile Rowers medium-set of in umbelliform or sub-racemose crymes | 168 |
| Corolla valvate, broadly campanulate, coronal scales 5 fleshy laterally com | |

C. 168

CALOTROPIS

The Swallow worts

gigantea.

pressed, radiating from the large staminal column dorsally spurred Stamens 5, adhering around the staminal axis, anther-cells with a schiziry jollen mass in each, pendulous flattened, tips of the anthers membranous, inflexed Follicles paired, thick, short, seeds comose

169

Calotropis Acia, Ham , Asclepinger

Syn -Asclerias Herbacea, Roxb , Fl Ind , Ed CB C , 259

Habitat.—A form met with in Eastern Bengal and Sikkim, having petiolite leaves, the blade tapering into the petiole and with a globular corolla tube.

This is much less known than either of the following species, and no particulars of its properties and uses are available.

170

C. gigantea, R Br , Fl Br Ind, IV, 17, Wight, Ill, 1 155, 136 A.

Syn - Asclepias gigantes, Willd

Oyu -- Asabetta Ak, og, urk, akond, dkan, mudhar, sofed-uk, llind, Akanda gurtikand, swet-akond, llend, Ahanda, SNTU, Aluk, NFRAL, Akra, ru, chanda malari Bond, Akanda, ru, akda cha jhada, MAR, Akada, Gkdámu jhada dhola akdo, Gul, Bu-elosha SIND.

on Hurn, JINGH , Haduri, JAVA

References -Royb, Fl Ind., Ed. C.B.C., 251 Wight Contri. Botony, India 53 Brandis, For Fl., 331; Kurs, For Fl., Burm II 200 Combbs. 31

Habitat —An erect, spreading, perennial shrub, thiefly frequenting waste lands. It ascends to 3,000 feet on the Himályya and extends from the Panjub to South Ladous

distributed to the in Burma, and cera, it is distrib

History — Vedic literature which were used the plant, name corruption, the (Fluck & Hanh

C. 170

Madár Gutta percha.

CALOTROPIS gigantea.

Mir Muhammad Husain notices three kinds,-ist, a large form with white flowers, large leaves, and much milky juice, found near towns, and, a form with smaller leaves and flowers, white on the outside but libic within, and 3rd, a still smaller kind with pale greenish-yellow flowers (D) mock) The 1-t and 2rd are most probably forms of C. gigantea, and

GUTTA-PERCHA.

the ard, O. procera

or probably three species C. procera was first described from a specimen collected in Tgypt by Prosper Alpinus (1580 84), and figured by him on his return to Italy (De Plantis A. p. pti., 1592) It is also the Apocyania synacum figured by Classics (Flack & Hanb, Phar-

The drug prepared from one or other of these species was apparently well known to the Arabians. Ibn Baytar (Sonti eimer's translation in 1842) describes the drug. Muhammadan writers at the present day refer to it under its Arabic name Ushar, in Persian it is known as Khark.

Properties and Uses-

The SAP yields a form of Gutta-percha, it is also used as a TAN and DYE a MANNA is said to exude from the plant, the bast FIBRE and PLOSS from the seeds are well-known fibres, the Root bark and SAP are MEDICINAL, a LIQUOR is reported to be prepared from the juice, the Wood is used for gunpowder charcoal, and various parts of the plant are employed for SACRED, DOMESTIC, and AGRICULTURAL purposes.

THE MILKY SAP-A SOURCE OF GUTTA-PPRCHA.

--- 1t -- 11 MILKY SAP. Gutta-percha. I7I

experiments were entirely conducted with C process and not with gigantea

the first instance, by Captain (since Colonel) Meadows Taylor in a letter to the Secretary, Agri-Horticultural Society of India, Vol VIII Afterwards Dr. Riddell republished his discovery in The Bombay Times in 1852 As these letters may not be accessible to persons likely to be

C 171

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| 36 | Dictionary of the Economic |
|-------------------|---|
| gigantea. | The Swallow-works. |
| GUTTA- PERCHA. | interested by this subject, the more important parts narrating the actual experiments are quoted below:— |
| { | |
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| | · |
| | |
| | |
| l | by the latter. |
| | when cool |
| | "Comparison with the true gutta-percha gives the following results — "Sulphure acid—chars it. "Nitice acid—converts it into a yellow resinous substance." |

"The above chemical tests correspond exactly with the established results of the

Dr. Riddell subsequently wrote -"As reparts my aring -

Madár Gutta-percha.

CALOTROPIS gigantea.

and worked it well about with a spatula, and when cool enough to handle, kneaded it

GUTTA-PERCHA.

percha lies in its being a good conductor of electricity, and therefore pertrailed unfitted for cable purposes, otherwise it would at once assume commercial importance." (Colonel D. G. Pittcher, Lucknow.) Dr. Duncan in 1820 ·

7 his again Dr. Y

closel Ward alban was found to agree with Payen's Fluaril as found in true guttapercha Speaking of these discoveries Dr. Dymock says: "The fact

the Drug) A Varnish-like Exudation,-Some time ago the writer observed the dk

plants in Chutia Nagpur completely covered with multitudes of small green insects The bushes did not look over-healthy, and (apparently as a result of the action of the insects) a gummy liquid exuded from them and trickled down to the ground below. The writer was travelling in company with Sir Monier Williams and one or two other gentlemen, so that this curious discovery was investigated by several persons, none

MADAR-ALBAN, 172

VARNISH. 173

| gigantea. | The Swallow worts |
|-------------------|---|
| TAN Dye 174 | THE DYE |
| | Dymont and he at skin |
| } | refer said to actuate samower with the powdered flour of the root |
| | THE MADER FIBRES. |
| FIBRE. Floss | Fibre - This plant, as also the next species, yields two distinct fibres- |
| 175 | |
| - { | |
| } | |
| ļ | Balfour remarks that "The silky down of the pods is used by natives on the Madras side in making soft cotton-like thread centible of being snin at a the fine." It is susceptible of being snin at a the fine. |
| | ne Panjab from the folicies in mean the flors of the seeds |
| | to improve the quality of the mader floss although there would seem to be no reason why, under careful cultivation and select no the? |
| , | the staple might not be greatly the following passage regardir woven into shawls and handker |
| | The fibre, being short, was fou |
| | ong ropes are made of |
| |) ;" |
| | had been able to spin the floss mixed with cotton and nool. In a lette published in the Ken Report for 1881, they state, however, that owing to the shortness of the fibre and its extreme lightness they were force to the conclusion that "it was practically useless." As opposed to the yerdick Mr. Hollins recently informed the author that he had at 18. |

C, :,3

Bast Fibre.

CALOTROPIS gigantea.

The Floss as a Paper-Fibre.—Several authors refer to the possibility of using this silk-cotton as a paper-stock, but unless cultivated its collection would be far too expensive to admit of this. Although wild, no single

FIBRE. Floss. 176

India; the gutta percha a medicine; are all marketable even

> to select the hem dry for at

from the sap, the touchark as a medicine; are all mark at the present day.

The Bark Fibre—its separation for The book fibre.

Bark.

Royle says: "The mode of several to of the more when separated

the present oppose some Captain Hollings states to or 18 inches in length; the fore picked from the placed side by side, and the hands. No water is unby manipulation the reports Major)

straightest branch

c .

the bark with the other. He did not find that any of the ordinary methods of separating fibre were useful, but it is probable that some of the mechanical methods of separating fibre were useful, but it is probable that some of the mechanical methods of separating flax would be effectual with this fibre when in a dry state? He reported that

nearly forcy years non) and Problem has been a published (now | of this fibre "separation of

ing the Madá
Universal Fit
found services...

The writer is favoured by Mr. L. Llotard with the following note regarding his recent experiments in the separation and examination of Indian fibres, and more particularly the opinion he has now arrived at regarding madar bast fibre:—

"In the autumn of 1884, while testing different machines in their power of extracting the fibres of various fibres yelding plants, I devoted attention to the akunda or madar amongst other plants. I had already studied this shrub preyiously, to a certain extent, and had formed a hopeTALOTROPIS

The Curallow morts

ojoantea. FIRRE

ful idea of it. But the trials just alluded to have induced me to alter considerably my previous opinion. I can now confidently state that the

able utilisation on a large scale outweigh its natural good qualities Without entering into many details, I may mention two of the chief obstacles -

"(1) the very small proportion of the fibre to weight of the stems, the

proportion being only 1 56 per cent; and
"(2) the shortness of the fibres, extending as they usually do from

manufacture of paper a material is required which, besides possessing -dr - t- at stand a-to-actich bestu

fibre becoming of commercial importance. The attempts made by manufacturers hitherto would seem not to have been conducted on a sufficiently extended scale to justify the expression of strong expectations or to dispel such hones

The recent experiments conducted by the author in conjunction with Mr. Cross of Lincoln's Inn. London, have revealed the fact that by nitest nor the fibre a c betance hebeen general had any head .

178

| Name of | the | fibre. | | | | | Weight in B the fibre can sustain |
|---|-----|--------|-------|---|---|-----|---|
| The fibre of Cocos nuculera | - | - | _ | | | _ | 224 D |
| " Hibiscus cannabinus | | | | | | 1 | 290 ,, |
| Sansviera zeylanica | | | | | | - 1 | 316 |
| " Gossypium herbaceur | n. | | | | | | 2.6 " |
| " Agave americana | | | | | | | |
| . Crotalaria juncea . | | | | | | | |
| " Calotropis gigantea | | | | • | • | • | 407 " |

| Products of India. | * |
|--|-------------------------|
| Cultivation of Madar. | CALOTROPIS gigantea. |
| Of the fibres experimented with by Wight, the maddr was by fa | r the |
| Madie bast fibre as a paper material.—Mr. G. W. Strettell, o Madie bast fibre as a paper material.—Mr. G. W. Strettell, o | the PAPER. |
| of the finest of Indian pl | |
| juite opposed to this; he believes exogenous plant of similar char to admit of its being employed as | that |
| parto selling at £4 a ton, landed in | اسمم |
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| | • |
| | • |
| The second secon | 180 |
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| and the Light Control of the Control | |
| | • |
| raised from seed, it is said by some to require two years before ready for cutting; but if cut close to the ground, it grows again ray relding a second crop within 12 months from the first." (Spont Engles) Royle's account of this fibre is the most complete statement published. | pidly, |
| | |
| V V | |
| • | |
| A Committee of the Comm | • |
| · · · · · · · · · · · · · · · · · · · | |
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| | • |

in connection with the late Colonial and Indian Exhibition, held i

CALOTROPIS gigantea

The Swallow worts

ber Descou

MEDICINE Lond A La d ffict trty

London, to discuss with manufacturers the prospects of maddr flos. A Lancashire spinner stated that he had now completely overcome the disculses offered by this floss, and was prepared to purchase any quantity. Being a wild plant collected over a wide area, the supply is limited and irregular. The quest on now arises will it pay to cultivate mad ir floss? The spinner referred to acting upon a suggestion made to him,

fibre Mr Cameron of Mysore writes to the author that a demand has recently ansen for this floss Messrs Collyer & Co of London offering 3d a pound for it. This is nearly twice as much is was being paid during the Exhibition time for Semil cotton (see Bombax)

MEDICINAL PROPERTIES

181

Chemical Properties — Much difference of opinion still prevails regarding the relative med canal values of C gigates and C process Dr Wight and with him the majority of authors have decided in favour of the latter, but

ant w this Hand (Gme

Bark 182

Considerable of the funce of which and of the funce T Hindu writers seem to prefe The Plarmacopæra further

C 182

| | LOTROPIS igantea. |
|--|--------------------------------|
| April and May '' to remove all coshade until the ' | MEDICINE. Root-bark. 183 |
| bark should then be carefully removed, dried, and reduced to a powder, and preserved in well-corked bottles. Moodeen Sheriff adds that the roots | Milky-Juice. 184 |
| tions, and to be useful in iscera, intestinal worms, | Flowers. 185 Leaves. |
| cough, acute purgritive and the milky pix | 186 |
| ive, stomache appeute." " so that the fi | |
| with whey in accites and enlargements of the abdominal viscera." "The | |
| of the legs and scrotum. The r nerifolia are mide into tents' tica, and introduced into sinu | |
| Mat. Med of the Hindus) According to Dr. Ossanora, madár stimulites the capillines and acts powerfully on the skin, and is accordingly recommended as a remedy in | |
| the obstinate cutaneous diseases of tropical climates, such as elephan- tiasis and leprosy. | |
| | |
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| | |
| work, and which bring it abreast of the most recent researches with the properties and uses of made's. Properties of the Juice or Milky Sap.—Ainslie, Modeen Sheriff, and | |
| | |
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| eful | |
| The second of th | |
| | |
| the dried leaves is dusted upon wounds to destroy excessive granulation | |
| a 1 - 111 | |

c t

| CALOTROPI | 0 |
|-----------|---|
| CWFOILD | 9 |
| | |
| oigantea. | |

The Swallow-worts

MEDICINE.

at the present day: "A large quantity of an aerid milky juice flows from wounds made in every part of these shrubs; the natives apply it to various medicinal purposes; besides which, they employ the plant itself

tuice, fresh flowers, and the root-bark are by far the best and most useful. In whatever way the milky juice is collected and dried, its smell and

dried in a fun or dean serial 4 an

they are converted into a soft mass when rubbed or bruised for the purpose of reducing them into powder; they also become soft when exposed

meatite. The park should not be removed as soon as the root is dug out, but about 24 hours afterwards The thick, so at and with which the bar with a knife before

Medical Opinions regarding Madár.

CALOTROPIS gigantea.

one of the best substitutes for specacianhi in this country, and his been found useful in many of the diseases for which the latter is indicated, including dysentery. As an alterative tone, it has a beneficial influence over some forms of secondary spahils, and is also temporarily useful in some recent cases of leprosy and a few other skin diseases. As a disphotential in the country of the cou

The following abstract from a detailed account of the use of maddijunce in the cure of snake-bite may be found interesting; this is the only instance, in a very extensive series of Medical opinions, in which maddi-

is recommended for this purpose:—

be lessened and given every hour. In no case does it require more than

Mairas

causes great purping and produces a pad sore -t. Hatt.

#College the harmon or make make her a new l

"The fresh juce is used with common salt in bruises and sprains, and the fresh leaves warmed are used as poultces in rehemation, gout, and rheumatic anthritis, to relieve painful joints. The juce is an irritant, and in large quantities an irritant poison." (Brigade Surgeon J. H. Than ton Mr. and Mr. a

ry inferior to that invalu-., Moorshedabad.) "The

In doses of from 5 to 10 grains with 1 grain of opium given twice or three times a day, it proves as efficient as specacuanha in cases of dysentery. It produces great heat in the stomach, but is less hable than specacuanha to produce vomiting."

(Assistant Surgeon Fasmant Rat, Moddan) "I have used powder of

convulsions, and also in wandering of the mind during fever. The leaves are also applied externally to relieve pain, being for that purpose kept warm by hot, dry applications." (Rev. A. Campbell, Santal Hission, Chutta Nagpur)

| • | | |
|------------------------|-------------------|--|
| CALOTROPIS gigantea | The Swallow worts | |
| MEDICINE | " | |

native physiciars in sphilis The flower buds, in doses of 5 grains, combined with black penner and ent tat on, and in cholera

(Hospital Assistant La The bark is said to be it to be so (Surgeon

cure abort on. Thus is effected by brushing the mouth of the womb through the vagina with the milk or juce of the plant. Root bark in powder or infus on or decoction is useful as an emmenagogue." (Surgeon Major E W Levinge Rajamundry, Godavery District) "The now

bark of are used secondar John A 180

CALOTROPIS Madár Manna gigantea. ed, are applied to the scrotum in epididymitis" (Surgeon Fames McClo-MEDICINE. thry, Poons) "The green leaves, ued in bundles and cut into halves, are ---ich castor used as a for oil has been gely used by the nativ Ganjam, Madras) " res as an alterative, and In abscess of foot, the natives heat a brick and place half a dozen leaves over the The flowers, made into poultice, relieve pain in the heels." antiperiodic. (Surgeon John Lancaster, Chittore) It is probable that the above special medical opinions refer to both this and the next species. As already stated, the majority of writers agree in regarding both as of equal medicinal ment. The reader is referred to C. procera under "Medicine" for one or two special opinions regarding that species. MADER LIQUOR AND MANNA. Food and Liquor.-The Ak is said by the Arabs and Persians to MANNA. yield a sugar or manna: this fact is briefly alluded to by Royle (Him.) 187 species of Ecumops; hal, for a description (Dr. W. Dymock, he varnish-like juice LIQUOR. 188 It is the la · - 1 expected; ferment th Mr. L "Barth st this plant whether th liquor, or i

it may be used, the practice of employing all juice (or bar) in the preparation of intoxicating liquors should be known to the inhabitants of Western

lar to hops

The Swallow-worts

gigantea.

LIQUOR.

48

known to the people on the eastern side of the peninsula. This would seem to point to the probability of the practice having reached India from Africa, and so, as far as India is concerned, and from a historic point of view, it would be of comparatively little interest. It should be remembered, however, that the sacred Same of the ancient Sanskrit writers has by many botanists been associated with a species of Sarcostemma, a genus belonging to the same tribe of Swallow-worts, and not very far removed from Calottonis. We have abundant evidence of the antiquity of the

above.

Truncs

TIMBER. 180

DOMESTIC AND SACRED LISES

DOMESTIC. IQO

Domestic and Sacred Uses - MANURE -" The leaves and stalks serve for reclaiming reli (covered with saline efflorescence) lands. These leaves are strewn about the ground and covered with earth, and then crushed by being stammed non 11/ -

When the undated as the nat

years bec. (Lishor, Us Pl , Bomb , 233) " In M in a h after as a manure for paddy field

Stee et en of the III and

manured will yield a much superi leaves and twigs are used in ? Forester, IX, 35) Ool Pitcher

cally examined the madar leaves in order to discover whether or not they

 carolla and strong into garands remonies The following extracts ombay will be found instructive -XX, in the narration of Gallava tree is mentioned to be the trans"It is ordered in the Sirgean Mahatma to worship Mariti (who is also known as Hannman), or the Monko-god, on every Sturday, with a girlind of the flowers of this tree, which are then offered to him. The twigs are also ordered to be used as substitutes for tooth brushes in the Omritism Granth. They are also employed as Samidis is for the feed-

ption of this plant, and

Calotropis procera, R Br , Fl Br. Ind , IV , 18, Wight, Ic , 1 1278

Syn.-C. Hamiltonii, Wall

Veru — Safed ik ik ig, madir, ikadi flind , At shakar ul ishar, shakar al-lighal, Pp., Spulmes, spalmak, pashkand, Trans-Indus; At, SIND, Hindira, Mar ; Alarka Sans.; Vellerbu, Tan , Mayopin, mehden, Burn ; Spalvatka, Arg.

Moodeen Sheriff, as well as U O Dutt, gives the same vernacular names for both the species of Calotropis

References — Brandis, For Fl., 331; Kurz, For Fl., Burm, Jl., 200; Gamble, Man Timb, 75, Dals & Gibs, Bomb Fl., 149; Stewart, Pb Pl., 141, Attchism, Cat. 1b Pl., 20; Varel, Hort Sub Cat., 540;

buide to the Bluseum, \$ 97

Habitat.—A shrub found in the direr parts of India, chiefly in the Sub-Himálayan tract, from the Indus to Jhelum, Oudh, Central India, and the Decean, also in Burma and distributed to Persia and tropical Africa

Gam.-As in preceding species

Medicine -As under Calotropis gigantea. Root of this species specially mentioned as used by the Pathans for tooth-brush, having the ment of

GUM Gutta percha, 192 MEDICINE, Root 193 Milk 194

Special Opinions - § "The fresh milk is employed in the Panjab for the purposes of infanticide [The mouth of the uterus is brushed with

Flowers 195 FODDER

Fodder—Used as a camel fodder (Sind Gar, 522) According to Dr Stocks in his Plants of Sind (Records of the Goel Bomboy, XIVI, 606), one of the four plants which the camel will not cat (See Camel Fodder). Domestic Uses—In Oudh this species is regarded as an ill favoured weed, notwithstanding its usefulness

FODDER 196 DOMESTIC Tooth brushes 197

The Camel CAMELUS CALTHA, Linn , Gen Pl , I , 6 Caltha palustris, Linn , Fl Br Ind , I , 21 , RANUNCULACEE. 108 THE MARSH MARIGOLD Vern - Mamiri, barings PB References - Stewart & Pb Pl , 2 Smith & Dic , 259 Treasury of Bolany Habitat - Marshes of the western temperate Himálaya, from Kashmír to Nepal altitude 8 000 to 10 000 feet Medicine -In Hazara the root is considered po sonous. MEDICINE IQQ Caltrops terrestrial see Tribulus terrestris, aquatic, see Trapa bispinosa. Calumba Root, see Jateorhiza palmata, Miers, Mevispermacese CALYCOPTERIS, Lam., Gen Pl 1.686 Calycopteris floribunda, Lamk, Il Br Ind., II, 449, Rexb., 200 Cor Pl. 1 87. COMBRETACEE Syu -Getonia floribunda, Roxb, Fl Ind, Ed C B C, 370 Vern - Kohorani C P , Ukshi, Man , Baidi murududu, Tel , Mar sada boli Myson References - Brandis For Fl 220 Mure For Fl, Burm, 1, 48, Gamble blan Timb, 185, Dale & Gibs, Bomb Fl, 91 Habitat -A large cl mbing shrub of Central and Southern India, and from Assam to S ngapore Found from plains up to 2 500 feet above sen MEDICINE Medicine -Young twigs when cut give out watery fluid used medici-20I nally Structure of the Wood -Yellowish white, moderately hard, tough with TIMBER numerous broad medullary patches of soft, pith like texture. Used for 202 making tool handles Calysaccion longifolium, Wight Ill 1 130 & Ron 1 1999; see Ochrocarpus longifolius, Benth & Hook f. Guttiferæ Calyptranthes, see Eugema THE CAMEL. Camelus, I inn 203 .

Habitat - I he two spec es-Camelin dromadas

Indian camel belor

C, 203

TWO SPECIES The Camel.

CAMELUS

been introduced to Australia and to New York, white it appends to five taken kindly to the sandy expanses of Nevada, a region in which thorny bushes abound, similar to those on which it browses in India and other warm countries. The Bactana camel, on the other hand, requires a colder

-- te'as'- ev-large Calaunt Dua.

7--7

Lake Baikal. In Central Asia both species are found, as also the hybrid between them. There are numerous recognised breeds of both species, and there are even dromedanes so acclimatised to alpine rocky regions, that they are prized as beasts of burden by the inhabitants of such counties. The Bactina camel is smaller than the dromedary, has longer, darker, and more plentful hair, and the pads of its feet are much harder (an adaptation doubless to the rocky region it inhabits) than those of the Araban camel. Palgrave, however, informs us that dark-coloured or

A FOSSIL CAMEL 204

light upon the original home of the animal is a matter of speculation. The Siwalik mountains, which skirt the foot of the Panjab Himálaya, have now been satisfactorily established as belonging to the placeme period

anumal only occurs there in a state of domestication and need not by any means be the actual descendant of the Siw alic camel. It is remarkable, lowever, that no one has ever seen the one-humped camel in a wild state, and unless we are to accept the somewhat extreme vew that they may after all be but varieties of one species (hence producing a fertile hybrid or corso-breed). Prejevalsky's home of the two-humped camel need have

WILD CAMELS. 205

CAMELUS.

The Wild Camel.

t feer -- which

himself

snot the so-taked white circums of the sound of the sound

Vernacular Names — Chameau, FR, Kameel, GER, Kamelos, GR, Camello, IT and SP, Camelus, LATIN, Unit, or ut, Hind, Jamal or gamal, ARAB, Ottogam, TAM, Loir-pitta or wonte, Tut., Unita, MALAY.

The Names given to the Camel.

| | | To 1 year | To 2 years | To 3 years | To 4 years | To 5 years | To 6 years | To 7 years | To 8 years, |
|--|--------|--------------|---------------|---------------------|---------------|---------------|---------------|---------------|----------------|
| | Male | Toda | Masat | {Trihun, { Lihak | Chhair | Doak | Chhiga | Nesh | Nesh |
| | Female | Toda | Mazat | Puraf | Lihari | Tro | Lar | Ku | tels |

M Kostenko tells us that in Turkistan the two humped camel is called two and the one-humped nar-two

References Ti () there to the limit of Chesney, of the ger

Breeds. 206 BREEDS AND RACES OF CAMELS.

the Panars is much more freely supplied with hair, is of lower stature as a

C. 206

The Camel.

CAMELUS.

patches, presenting a mangy appearance, this would probably be restored on the return of cold weather, there were only a few specimens bought by officers above k-andahar as currosities, so that there was little opportunity of judging as to their qualifications for transport. BREEDS.

MORTALITY AND OF THE CAMESE USED IN THE AFGHAN WAR—
The verdet presend to the various officers whose opinions were called for or the subject of the losses of camels during the Afghan camping most pronounced and uniform. The plants camels were preferred for the transport service on the hoster or Indian side, but were quies

Mortality.

death appears to have been cruved through some affection of the lungs. The hill camels pershed through the heat of the Bolan pass and the plains camele by the cold of the higher regions, but both had previously endured privation and excessive fatigue. It is reported that of one consignment of Panjab camels nearly 3,000 died or were lost by desertion, but it is probable that if the losses among the Sind, Baluchistan, and other

hot sandy regions, which has given to this beast of burden the appellation of the "ship of the desert," while others have been so far altered in their hab is and character as to be useful on rocky and mountanous countries and be even capable of sleeping on ground from which the snow has been only removed for their accommodation. The principal breeds of

ERSION TO

ing Indian camels may be found useful According to the Panjab Gazetteer for

20

are known as a much light The female c

The female c

from that date for 20 years, and during the same period the male may be worked but the lemale is tarely laden. A good male camel will carry a load of 8 maunds, and he will take double marches of from 20 to

| CAMELUS | The Camel. |
|------------------|--|
| BREEDS. | d . r t . g . d |
| Gestation. | Sizeu nead, thick skin, and is di a brown colout. In e danaa camel is grey, and has a large head, small mouth, and thin skin. The Hadra camel has a small tail and is of a red colour. This is the worst of the three kinds, as it has no endurance on a journey. The Ganda is the three kinds, as it has no endurance on a journey. The Ganda is the strength of the camels of the district are of no use for rading. "Large herds go down annually to Bhiwdan for employment." "It well treated a camel will be for 40 years." The coupling seasons is from December to the first young one, bearing 9 or 10 one is weared, out it uch its 10 years glass when it is only 22 days out. A camel will feed her young and yield its seers of milk a day besides. The owner milks the cow twice a day, leaving two teats for the young one. The milk welds a trib and himse milk hands have a day leaving two teats for the young one. |
| | camels are superior to those reared in the Dera Ismail Khan district, "No good riding camels are being imported from a she-camel will have had er for Thal to the super- report says, believe they |
| Sind. 210 | rack district, says of the domestic animals the one-humped camel takes the first scarce, but |
| Raiputana 2II | uently seen. his Arabia The Kar- witch in pace and hardness is said to vie with that bred in the Thar and Parkar district" RAJPUTINA CASPES—The Bikáníc camels are famous all over India for he no the second of the |
| Bombay, 212 | the oit wor like in the Guyara (Gazetteer, Ahmedobad District) it is stated that the Ahmedobad cametes are kess priced than those brought from March Charles are the springer than those brought from March Charles are the springer than those brought from March Charles are the springer than those brought from March Charles are the springer than those brought from March Charles are the springer than those brought from March Charles are the springer than those brought from March Charles are the springer than the spr |

The Camel.

CAMELUS.

"Those, especially the very swift Ti

war camels is found in Dhandhuk recorded that excellent camels are the Machu Kantha, &c. "The

the Macha Kántha, &c. "The freely, and graze in the swamps." Cameis muk is used for feeding roung bores, and in cases of diseased spleen." The idea that camel's mik strengthens and improves foals is very general all over the parts of findia where the camel is met with, but the above statement that the camels of Kathiawar graze in the mangrove swamps is remarkable, as in all other districts of India the opinion prevails that the camel has a strong dislike to water and will not thrive in damp, swampy regions. So general is this belief that Mr. Darwin, in his "Animals and Plants under Domestication," was led to allude to the fact as politing to the desert origin of the animal, since in domestication it has not been able to conquer its acrision to water. The Kathiawar breed may have overcome this feeling ust as the one-humped camels reared in Afgehanistan and other

Camels feeding in swamps.

the great muscular development of the fole as compared with the hind

legs ARABIAN CAMELS - Palgrave (Central and Eastern Arabia, 1, 324)
Saws "The camel and the dromedary in Arabia are the same identical

I am a see present not that the decreation in both had a me t

cold mountainous countries seem to have lost to a large extent their love

Arabian 213

exists indeed, but it is neither an Arab dromedary nor camel, it belongs to the Persian breed, called by the Arabs 'Dakhti' or Bactrian' Palgrave further adds that to see a dromedary it is necessary to go to Arabia, 'for these animals are not often to be met with elsewhere, not even in Syria, and whoever wishes to contemplate the species in all its beauty must prolong his journey to Omán, the most distant corner of the Peninsula, and which is for domedaries what Negel is for horses' 'According to this definition the riding camels of Rajputana are the dromedaries what Negel is for horses' 'According to this definition the riding camels of Rajputana are the dromedaries who file Maint the Omân of India

RUTTING AND BREEDING

There seems to be much difference of opinion as to the duration of the period of gestation. According to some writers the female carries her young for 11 months only, by others for 12 or even 13 months. She comes into heat when she is three years old, and bears one foal every 2 years or 30 for 15 to 20 years. She suckles her young for 12 months, but about 20 days after brith the infant animal commences to mbble the

Breeding

Gestation. 214 CAMELUS

grass. The period of the year when rutting commences seems to have - Las La Tur-

live for 40 to 45 years

), but ρυ υτι c male 1... in things and office nour ly my a court a refuses food and water and becomes unmanageable The female is rarely worked but is reserved for breeding purposes, and to supply the milk on which the camel breeders largely live If well cared for a camel will

POWER OF ENDURANCE

Privation 215

Privation from both food and drink-Incidentally allusion has been

Eating naisanaus plants

he is not normally so, privation seems to have that effect on him camels from the plains of India at all events were observed to eat plants which the hill camels would not touch, and which have the local reputation of being poisonous to the camel In another paragraph will be camel

:--113)

Privation from Water 216

On the other hand, numerous writers affirm that three or at most five days without water will kill the camel unless the fodder given is green and moist. Kostenko tells us that camels eat only during the day they eat quickly and are satisfied with 2-3 hours grazing If subjected to pri-

Beath from 217

The Hump

LOAD, &C

LOAD, DISTANCE, AND RATE OF MARCHING.

The carrying power of the camel will depend to a great measure on the stock it has come from, and the climate in which it is to be employed. The Central Asiatic camel is as a rule, more vigorous and enduring than either the Indian or African The load a camel will bear greatly depends on the

C. 217

CAMELUS.

nature of the work or which it is employed. For a short distance, and in its usual avocation, a healths camed will carry about 1,100 to 1,200fb but Average load, where produce or baggage has to be carried to a distance, 300 to 400th will 218 C ---!---

but in the latter case the Bactman or two-humped camel is 300 to 500lb, employed

Prime age

Colonel J 1 Boswell says the Panjab camels known as Sangar are

If these figures be corrcamel trots much faster than t

tion is said to be very easy, but the gallop extremely disagreeable Swift camels are reported to get over 100 miles a day at a push, but the ordinary journey which they will keep up day after day is about 40 to 50 Fortune mentions an instance of an Arab having accomplished a journey of 225 miles in 28 hours, thus keeping up 8 miles an hour continuously General Chesney mentions that he crossed from Basrah

hours, the variations being accounted for by the slightly different tracts followed The Krah

rts, the shafts being When so voked nstructed cart they is sometimes seen

soked to the plough

DISPASES.

The limited space at the writer's disposal has compelled the present article to assume the form of little more than an abstract of the literature on the subtect. He is thus precluded from attempting to give even the commonest facts regarding the diseases of the camel or their modes of treatment It is generally believed that the camel is liable to a number of diseases peculiar to itself, but is not subject to the attacks of infectious diseases which carry off other cattle. For military purposes by far the most

Camels in harness 221

DISEASES 222

CAMEL FODDERS

Plants eaten by Camels

serious disorder is the result of careless loading and a badly fitting saddle,

Sores on the Back.

other It has already been stated that many of the camels employed in the Afghan campaign succumbed to heat and others to cold, but it has been contended that the privation they endured for some time previously was the actual cause of death. This seems to be proved by the immunity enjoyed by the camels belonging to the officers, most of which returned in \$

the best treatise that has appeared.

Kostenko says the disease known in Turkistan as Sarpo causes the soles of the animal's feet to fall off, and he adds, that as with all the other diseases to which the camel is subject, this is treated by the nomads by freedom from work and good food

۸,

FOOD AND FODDER.

FOOD AND FODDER. 223 To keep a camel in health it should be allowed 6 hours grazing and

t m cove the beca treat hows

are 1 latte and therefore be met by furnishing two lists, vie, the plants mentioned by authors as more peculiarly camel folders and the plants of which the camel will either not eat or on which are possonous to it.

CAMEL FODDERS.

224

Acacia arabica, Willd , Leguminosæ.
 A Farnesiana, Willd

3 Ægiceras majus, Gærin , Myrsiveæ.
4 Albizna Lebbek, Benth , Leguminosæ

5 Albagi maniform, Desu . Leguminos =

THE CAMEL THORN OR SHUTAR WHÁR

Veru — Jumusé of jumpayé of yau 152, japanis Hind Ps., Bom., Tamiya, jama, jamas, jamasa, jamasa, Ps., Dalallabhé Beng., Kaudere, Sind., Duralabha girikarnika yawaz Sans. Skutar khar, Pers., Alhayu, Arab., Zas, Pushiu; Zos, 2022n, Trans Indus.

C. 224

Plants eaten by Camels.

CAMELUS.

A widely distributed shrub of the Ganges valley and the arid and FODDER Camel Thorn-

probable that about 50 to 60 maunds might be collected at Pishin and stored for winter use

- 6. Amarantus polygamus, Linn , AMARANTACER
- Anthrochemam indicum, Moq., CHF\0F0DIACEE.
 Attriplex Stocksu, Boiss., CHE\0F0DIACEE.
 - Avicennia officinalis, Linn. : VERBENACEE
- o Banhinia racemosa, Lam : Leguminos #.
- Berbetis, various species. Berbering
- 12. Calligonum polygonoides, Linn . Polygonace E.
- 13. Cardaus nutans, Linn . Composita:
- 14. Corchorus Antichorus, Rausch . Tillicen
- 15. Cressa cretica, Linn : Convolvulacese. 16. Crotalaria Burhia, Ham , Leguminosse
- 17. Dalbergia Sissoo, Rozb , Leguminosæ 18. Dodonæa viscosa, Lina , Sapiadaceæ
- in Eclipta alba, Hassk , Composite
- 20 Haloxylon multiflorum, Bunge . CHENOPODIACEAE.

Syn —ANABASIS MULTIFLORA, Moq

Vern, Gora lani, lánd or land, SIND , Ghalme, TRANS INDUS

Common in the North-Western Panjáb and the Salt Range, and distributed to Afghánistan Camels are fond of the plant.

21. H. recurvum, Bunge.

Khar-Sajji.

The Lani

It is known in the Trans-Indus as leghma, and in Cu-Iodus as khar, in Sind as khar land A writer in the Panyab Gas-ther asys that camele thrive best if fed one day upon the lane and the next upon the plat (Salvadora oloudes). The term land appears to be almost generic for all the Chenopodiaceous plants alluded to in this list, but it is more especially anolicable to this senders.

CAMEL FODDERS

Plants eaten by Camels.

FODDER. 22 H

- 22 Halocharis violaceæ, Bunge . CHENOPODIACEÆ
- 23 Indigofera pauciflora, Delile Leguninosa
- 21 Kochia Indica. Wight , CHENOPODIACER
- 25 Lippia nodiflora, Rich . VERBENACEÆ
- 26 Leptadenia Spartium, Wight . ASCLEPIADACEA
 - 27 Lycium europæum, Linn , Solanace.
 - Ly Lycian Caropicani, 2007, 2020
 - 28 Melia Azadirachta, Linn . MFLIACEE
 - 29 Mimosa rubicaulis, Linn , Leguminos E.
 - 30 Mollugo hurta, Thunb , Ficoider.
- 31. Phoenix dactylifera, Linn , Palmæ.
 - 32 Pistacia integerrima, J L Stewart, Anacardiace &
 - 33 P mutica, Fisch & They
 - 34 Prosonis spicigera, Linn . LEGUMINOSE
 - 35 Psoralea plicata, Delile, Leguminos.
- 36 Quercus Ilex, Linn . Cupulifer &

THE HOLLY OAK

Vern - Charges sere

Vetti — Charres, seres, balát sháh balut, AfG , Chúr, ban, kathán ban, írrs, ysru khareo, Ps , Spercheres, pargus, kharansa, Trans-Indus.

occur in Pishin

- 37. Rubia tinctorum, Linn , Rubiace &
- 38 Salicornia brachiata, Rozb , CHENOPODIACRÆ
- 30 Salsola foetida, Del , Chevopodiace &

Moti lani.

Vern -Moti lant Pe , Mitho lani, samunaar lani, SIND

A camel fodder, but also used in the preparation of $\it khdr sajji$, especially near Jhelum

- 40 S Kalı, Lınn
- 41 Salvadora oleoides, Done . Salvadoraca.

Vern -Kabbar, jhar, diar, jal, vani jhal, ughai, kotu, pila, pil, plewane, mith van, Hind, Ps., Tam; Pilé, Mas, Sadni djar, mithi diar, Sind

Pilu

sweetish and is largely eaten by the natives.
The leaves serve as fodder for camels

C, 224

Plants eaten by Camels.

CAMEL FODDERS

FODDER.

Chhoti Lani.

42. Salvadora persica, Linn

Vern .- 711 kaurs ván, kauri-jal, chhois ván, PB , Jál, N W P , Kabir (tuber by Stocks), there dihar, than diar, SIND, Pedd 1 marage-wenks,

TEL.; Opa, ughai, TAM 1.5 - many of the drier -West Provinces, · s and very small omatic smell, and

The shoots and leaves are pungent, and are occasionally eaten as salad, given as fodder to camels.

43. Suzda fruticosa, Forsk., CHENOPODIACEÆ

Vetn.-Chhoti line, lunat, phesat line, barre lina, dina, Cis Indus, Zamie, Trans-Indus, Aout line, usat lune, lunat Sind.

A sub-erect bush, common in North-West India from Delhi to the Indus, and distributed westward to Africa and America

Employed in the preparation of khár svyf, but also extolled as a camel fodder. Major Clifford says, it is abundant at Chuckluk in Pishin

44. S. mantima, Damort, and S. nudiflora, Mog.

4c. Tamanx gallica, Linn . Tamariscines.

Trianthema. - Four species belonging to this genus frequent the sandy tracts of the Panjab and Sind, and, according to Stocks, one or all are known as Fysur lani, they are regularly eaten by carnels

The following are the better known species of this genus .-

46. Trianthema cyrstallina, Vahl , Ficoider.

47. T. monogyna, Linn

48. T. pentandra, Linn.

49 Vitis tarnosa, Lam , Ampeliden.

to. Zizyphus nummulana, IV. & A . RHAMNER.

Vern.— Mallá, bér, birar, jhari, N.-W. P., Ganer, jangra, Sino, Malla, tokni bér maraber, jand, jharberi sari, birota, PB., Karkana, TRANS-INDUS, Karkanna, Arc A densely branched, small bush, met with in the drier parts of India

Mr. F. Kinsman, of the Telegraph Department, informs the writer that this plant may be regarded as the most important camel fodder in a great part of Rajputana The natives, to cut the plant, have invented a peculiar axe, with the cutting edge turned, so that it is parallel to the

Rajputana Fodder.

225

51. Zygophillem simplex, Linn , Zygophyllem.

PLANTS POISONOUS OR AT LEAST NOT WHOLESOME TO

1. Acous Calamus, Linn . Aroide #

Vern .- Bach, Hind. , Vekkanda, Bons ; Vaj, ARAB , Agri turki, PERS Barr bot. PB

CAMEL FODDERS.

Plants possonous or not wholesome to Camels.

POISONOUS

Bach Akel.

A semi-aquatic plant, met with in damp places in India, at altitudes

from 3 000 to 6 000 feet 3 13 L 2 L 1 l a l - 1 aten, during 10050 nous to 1 te the same which may

Mr Steel re not quite so were poisoned bly be Acorus

Laianus it is necessary to add that the name akri is in the Panjáb applied to Withana coagulans (which see), a plant which bears no resemblance to an Iris whatsoever.

2. Calotropis gigantea and C. procera, R. Br. . ASCLEPIADACEE.

Vern -Ak, madér, Hind, PB and Sind., Spalmes, spalmak, AFG; Ushar, ARAB. Khark, PERS

Stocks enumerates this among his four plants which the camel will not eat, but the Sind Gazetteer (page 522), under the account of the district Mehar, states that it is a camel folder it is probable Dr. Stocks is correct.

- 3. Cannabis sativa, Linn , URTICACER
- 4. Euphorbia nemifolia, Linn , Euphorbiace &
- 5. E Royleana, Bosss.
- 6. E. Tirucalli, Linn.

7. Nerium odorum, Solander . APOCYNACER

SWEET-SCENTED OLEANDER

Vetn — Kaner, kontra, ganhisa Hind, Pa, Karabi, Beno, Kanhere kanir, Boma, Difti, Arab, Ahar zahrah (the Asses bane), Pers A com-

this plant (Zowr or) proves fat

officers h rate of ca however,

poisonous wholesom

against the product you called you untarily eating poisonous herbs, as was suspected by some, when the mortality was so great at Quetta (Compare with Acoras)

8 Othonnopsis intermedia, Boiss , Compositie

Vern — Gungu, Pushtu

Mr J H Lace, of the Forest Department, Quetta, reports that the Biluchis regard this plant as poisonous to the camel

o Peganam Harmala, Linn., Rutacen.

Vern — Harmal, ARAB , Island, PERS , Spelane, karmal, PB , Island, Hind A small bush, much branched and densely clothed with dissected leaves The whole plant strongly scented.

The camel will not est this plant.

C. 225

Economic Products derived from the Camels.

CAMEL-HIDE.

PRICES 226

HAIR.

227

10. Withania coagulans, Dinal . Solanice t.

• •

Vern.-Alre, panir, PB , Panir, SIND, Panir bad, PERS.

Will ak on man management of the Hodgemen

CAMEL-FLESH AND PRICES PAID FOR THE ANIMAL

It is stated by writers on the subject that camel-flesh is very tough, but that the flesh of the sucking camel is passible. The camel owners

ing the second of the second o

the northern, and the hair is finer. They are cheaper in proportion than sheep, twenty-five to thirty shillings is an average price."

CAMEL-HAIR.

The amount of hair or wool which the camel possesses seems to be inversely to the warmth of the country in which it is found. The two-humped camel has a longer and more abundant crop than the single-humped, and the wild camel most of all. It has already been stated that the natives near Lob-nor are said to hunt the wild camel on account of its hair, which is much valued for its softness. The single-humped camel, acclimatised to colder regions, loses its hair when brought into

chogas of a cheap kind, but they are soft, warm, and useful The long

har is not made use of "in India, but "it is employed in Europe for making paint brushes" In the manufacture of artists' har-brushes or pencils, in addition to camel-hair the fine hairs of the sable, the minimer, the martin, the badger, and the polecat are also employed

CAMEL-HIDE,

228

Lower Provinces (where the camel does not occur), of cow, buffalo, or

CAMEL'S MILK.

Economic Products derived from the Camel.

Kuppas 229 horse hide, but the writer can discover no account of the manufacture of the immense number of skin or feathern oil jars which form an almost characteristic feature of every bazár in Lower India. It would, however, appear that other skins are sometimes employed in addition to camel-hide, but as they are more expensive and more difficult to work, camel-hide is manuly used. The smaller ornamental jars employed for the

Kuppi 230

about R2 to R3 a piece.

MILK. 23I

CAMEL'S MILK

It is scarcely necessary to enlarge on this subject further than has

Halwa. 232

seems to be done in the article although it does not appear to be anywhere made in India. It is known in the bazats as muscat-ka haling.

C. 232

CAMELLIA, Linn ; Gen Pl., I, 187

radicle short, superior

The genus Camellia is named in honour of Camellus (Joseph Kamel), a Morayian Jesuit and Asiatic explorer The cultivated or ornamental Camellias are mainly derived from C. japonica, a native of China and Japan, this was introduced into Europe in 1740 The Camellias are easy of cultivation in warm temperate climates, the best soil being a mixture of sandy-loam and peat. The pots should be well drained and the plants

Mok-les

The seeds of C. drupifera (formerly known as C. oleifera, Wall) yield the largest amount of oil, but all the Camellia seeds contain a useful sweet oil By far the most important of the Camellias, however, is that from which Tea is obtained

Linnæus, in the middle of the eighteenth century, gave the Tea plant the name of Thea smensis (T. chinensis), but coon after, in the second edition of his Species Plantarum, he deemed it advisable to assume that the green and the black teas of commerce were obtained from different plants. He accordingly called the plant from which he supposed the green tea was obtained. These vindis, and the black tea, These bothes, the latter specific name being derived from the "Wu-1 or Bu-1 Mountains in the

scribed as a separate species under the name of Thea assamica, Masters, but recent investigation has proved this to be but a large-leaved subtropical form of C. theilera, and it is open to doubt if it be even indigenous

CAMELLIA

The Tea plant

TEA. History of Assam Tea It is most probably only an escape from early cultivation, so far as Assam is concerned The first scientific tea explorers of the forests around Sadiya, namely, Drs. Wallich, McClelland, and Griffith, describe it as

Government cultivation of tea, since the stock found in Assam was of such inferior quality. In a correspondence with Assam tea planters, however, the winter has had this idea of the inferior quality, or rather degeneration, contested on the ground that the China plant, on its introduction into Assam, became smaller instead of larger leaved, whereas the Assam supposed escape from an early cultivation showed no such tendency and was on this account presumably a distinct plant from the China. This

Manipur Tea 234

region of the Assam and in the very latitude of the accepted Chinese

ted cuttivation, was the seen cultivated in China I a plant which in many s to be seen in the damp

The Tea plant

CAMELLIA

The cross fertil zation of these two forms gave origin to the popular race known as the 'Assam hybrid,' a term which scientifically must be viewed as incorrect, since it is not a cross between two species but between two forms of the same species. It is more accurately a TEA Assam 235

pecularities of this widely cultivated "hybrid" stock (such as the case by which it is propagated by seed), but it leaves absolutely the experimental production of a real hybrid between C theifera and some of the other truly Indian wild (though hitherto non tea producing) species, a problem that would seem well worthy the attenuon of the practical planter Whether any improvement in quality or health ness of stock would result from the production of such a hybrid remains to be seen. Indeed this may

ing of the manufacture of tea, so that the past 50 years of Indian tea cultivation have seen no new forms produced and perhaps little improve ment in the methods of cultivation

It is constantly protested by the planter that he can d stingu sh the Manipur stock from the Assam, the China, and the hybrid the argument be ng that, therefore, they are quite distinct plants The contention here urged does not for a moment d scountenance the idea that these forms are recognisable Local varieties exist of every widely distributed plant Cultivation will mod fy almost any plant and even produce departures from the original type that are constant under certain conditions of cli mate and soil so-called Assa

cabbage may

the cauliflower, but, in spine of all this the forms of the ica plant i eed Recognisable not possess so high a claim as these well known vegetables to be regarded as even varieties of a common species The term variety is here used of course in its strictly scientific sense and not in the loose popular manner

forms

236

wild plant

Assam Indigenous 237

(conf with

23

CAMELLIA.

The Tea-plant.

TEA.

belongs to the section Thea of the genus Camellia, vis, C. caudata, a species n Sylhet a this spec hybridsis

First Assam Tea Garden have been disposed of. The As-am planters are nearly unanimous in saying that the indigenous Assam or even the Manipur is superior to the China-Assam hibrid Dr. J. Berry White, for instance, in an instructive paper read before the Society of Aris (May 21th, 1887) remarks that—'It is a matter for protound regret that this garden (Chabwa) did not share the fate of its predecessor, for it proved the chief means of disseminating the pest of Assam—the miserable China variety—all over the province, not only by means of seed, but, owing to its profiles inflor

were impregnated which now forms but also in Ceylo either for the intr

tested?

between it and the plant found in Assam Other planters state that a first class hybrid is, however, at least as profitable a plant togrow as the pure Assam, since it will yield better at the beginning and the end of the season when the weather a togothal for the additional plants.

chimate? Is the China plant, in other words, suited to Assam, and if not, is

| The Ica plants | drupife |
|--|------------------|
| and enumerated the various scientific and planter's names given to these, it may be as well to define very briefly each of the Indian speces of Camellas, desugning the rearrous economic and industrial properties before giving a brieflistory of the rise and present position of the Tea Industry. The reader is referred for further information to the article Tax | } |
| Camella caudata, Wall, Pl As Rar, III, 36, Fl Br Ind I, | Species Camel |

References -Grif Notal IV 550 t 601; Trans Agri Hort Soc Ind . 1 , 1839 ! A , Aura Fl Burm , I too Gambles Man Timb 30 Habitat.-A smallish bush, found in the Bhutan, Mishmi, Khasia and

Sylhet hills, and in Martaban, at altitudes from 3 000 to 5 000 feet above the sea Botanic Diagnosis -- Leaves with tapering points hairy beneath and

only 3 to 4 by 1 to 1 inch in size Flowers white solitary, nodding with the stamens and styles hairy, as also the outer surfaces of the sepals and petals, sepals persistent

This species is apparently not used for any industrial purpose, but it

C drupifera, Lour, Fl Br Int, I 203

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Syn.—C KISSI Wall As Res XIII 420 Jour, As Soc Beng II 49 t 2 Pl As Res III 35 t 250 C KRINA Den Prod Nepsl 221 C MASTERSIA Grif, Notal IV, S30 C SIMPLICIPOLIA Grif, Notal IV, 550 t 604 C. CAUDITA, Grif (non Wall); C GLEIFERA,

Vern - Kissi kingua Nep , Chashing BHUTIA and LEPCHA References -Kurs, For Fl , Burm I 109, Gamble Man Timb , 30

a laborare

also Darjeelig List 9 Habitat - A large evergreen shrub with slender much divided branches met with in Nepál and on the Eastern Himálaya generally in Bhután the Khasia hills, Northern Cachar hills Manipur Tenasserim and the Andaman Islands at altitudes from 3 000 to 8 000 feet above the sea

Botanic Diagnosis -Leave below and having also a long

towards the apex, and often re branous scales embracing the

of the cherry laurel Sepals silky externally, deciduous (i.e., not persis Petals emarginate Stamens glabrous Styles nearly free, woolly at the base

DI_I shala ad t

samples of the oil from tea seed were shown and were much adm red Without any appreciable extra trouble this species might be reared as a hedge and yield a fairly remunerative oil crop at the same time. It is a

C. 240

Difera.

CAMELLIA

ecles of mella 238

239

tea of nal

110 240

| 70 | |
|---------------------------|---|
| CAMELLIA theifera. | |
| TEA. | non-drying oil of a superior quality; it is used medicinally in Cochin |
| Sasangua OII 24I | sure, the pulp being boiled and again pressed The leaves are largely used by Japanese ladies for washing the hair, carried seems uncertain, owe more to the flowers |
| TIMBER. | ven-grained; weight 60b |
| 242 | O III Internet Day D. D. Jul 7 and |
| 243 | Camellia Intescens, Dyer; F., Br. Ind, I., 293. Habitat—Mishmi Hills. Boti- Langes ers erse ers erse Very little is known of this plant. |
| True Tea Plant. 244 | C. theifera, Griff., Notul. IV., 558, t 601; Fl. Br. Ind., I., 292. Tea, Eng, Thé, Fr.; Thi, Germ.; Te, Dutch, Il., Sp. & Scotch; Chai, Rus & Turk. |
| | Syr ** |
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| | |
| | |
| | Vern-Te, chia, Chinese (Crawford regards the word to as of Malay organ, but Volle savistic Choses, brunes like a and other made or what |
| | origin, but Yule says its Chenese, having, his many other word; reached the west through the Malaya), Chid, Arab, Pers, and Hirdo; Chedera, Cochin-China (according to Loureitro), Rata-tekola (according |

The Tea-plant.

CAMELLIA theifera.

to Moon) is the Ceylon name for Thea bohen. Balfour enumerates the following names and to be Chinese. Ming-kulu, in, ku-cha, kia, sheh, and chuen, he further mentons the following Indian vernaculars, but these would appear to be tea garden dames of a modern origin — Dullitham (white wood), Cachar; Phlap or khiap, misa phlap (in Muttack), Hillat, Assim. TEA.

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245

S20.

ea manulacture-Report on, by t Thea, in Royle's Ill , 125, 1839

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Cultivation of Ica on the rimauja, a secture delivered by Dr. J. Royle, at the Royal Assatic Society, 4th April 1844. Tea, Report on the Cultivation and Manufacture of Tea in Kumaon and Garhwal by Dr W Jameson, 1843-45 (see also Jour. Agri-Hort: Soc Ind., II and IV)

| 72 | Dictionary by the |
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| CAMELLIA | The Tea-plant. |
| TEA Bibliography | m |
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| | 372 |
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The Tea plant.

CAMELLIA theifera.

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Exh , 1885 ulturist and

734, 1887 11. pp 181

08, 102, 104, 105, 140, 155, and 160, VI, p 10, VII, p 1 (and Pro pp 45, 59), VIII, pp 60 and 282 [
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232, App 408 (Chittagong), p 337 (Assam), p 5 (Paragua)

47, 63; 1875-76, p 20, 1876-77, pp 11, 49, 1877-78, p 32, 1878-79, pp 33, 33; 1879-80, p 42, 1880-81, pp 39, 54, 1881-82, pp 47, 76, 1832-83, pp 61, 92; 1833-84, p 39, 1831-85, pp. 21,

47; and 1885 86, pp 28, 38, 39

Habitat—As ponning to a common origin for the cultivated plant it is note-worthy that the name Chân or some form of that word is given to ten India, Persia, Russia, China, and Japan But travellers in China do not appear to have observed the mid plant, and DeCandolle accordingly has come to the conclusion "that the tea plant must be wild in the mountainous region which separates the plans of India from those of China, but the use of the leaves was not formerly known in India," He further admits that "it is probable it exists also in the mountainous districts of south eastern China, where naturalists have not yet penetrated "Loureno (Fl Cachin, § 444 says th. "...")

China "cultivated and uncultivated," ceolate and acutely serrate, a descri

Distribution

of Tea Plant.

240

CAMELLIA theifera

The Tea plant

TEA

from those of China," it has been established beyond doubt that one if

and Burma) the plant exists as a forest tree in such profusion as to leave no possible doubt that it is truly indigenous. It is note worthly that Manipur occurs in the very laptitude to which many authors fix the possible Ch nese wild home of the plant. It is, perhaps des rable,

hills, and through Manipur to the mountains of Burma and again south

Shan Wet Tea 247 (Conf with 251)

decoction but is eaten as a preserve with other articles of food. The Western Tibetans builtea with flour and butter and eat the mixture like a pudding a habit somewhat similar to that followed by the Shans and

Burmans of eating to the leaves The St

wet tea from almost records of this fact

Yunnan Tea. 248 records of this fact

Bhamo and on the capacity of the Shan Countries (dated granuary 1826, but reprinted in Set Rec. Beng Goot, XVV, 1857) Various early accounts also exist of a trade in tea between Assum and Burnaw with Yunnan, so that there eseems little doubt the true tea plant is now, and

cated as the known distribution of the fea plant except at the extreme south eastern corrier or in regions more or less adjacent to Manpur. It would thus appear that DeCandolle's opin on as to the home of the tea plant being the mountainous region which separates the plains of India from those of China's strictly speaking too extended. The plant in a truly w ld cond tion occurs only in a small portion of the extreme easterly division of that mountainous tract and further, as already re marked as far as we have any direct evidence to bear on the question, Far away to the east,

Manipur, in South ur We know very untainous and agnieral travellers have

| The Tea plant. | CAMELLIA theifera. |
|--|--|
| reported tea as being found in an irregular state of cultivation (Tran. Pionter of Commerce, pice 1711), speaking of the 20-22. A consistency of Commerce, pice 1711, speaking of the 20-22. Speaking of the 2 | |
| from the leaves of a different and did outer parts of libet, be actually made | Brick Tea of Western China. 250 |
| nese and Japanese tea culvation thus extends from 20° to 24° North latitude. It is frequently found growing in regular texture snow, winter, a fact which seems t. Royle and the other earlier advisers of the selection the H or harmonic forms. | Region of Chinese Tea |
| industrial is grown on th | t |
| of Central North lattu 23° and 22° The other species of Indian Camelhas occur approximately along the same region as has been indicated for C drupifera, only that they are much less abundant and are met with in the contract of the contrac | |
| ture the suggesting as to produce the required fermentation as practised to day be the Shane in Thomas P and the Shane in | (Conf with 247) 251 |

CAMELLIA theifers

The Tea plant.

the Tibetan method of eating the tea leaves after they had been boiled in TE . flour and butter From this one might be nardoned drawing on imagination still further by supposing the enlightened Chinese to have improved the process of manufacture and to have refined the method of cooking by preparing an infusion from the leaves instead of eating them As

partly supporting this theory we have the astonishment expressed by several of the earlier writers that the Chinese only pour boiling water Aller writers that the Chinese thing pour Cordamons hill tribes who the sugar used ter that he has either eating st

writes to the

Smoking Tes.

smoke in place as not able for some time to detect that it was tea and not toharco that he had been actually smoking

The sturing national migrations of the early inhabitants of Eastern l. ah

The Spread of tion

it may be urged that there are references to tea in Chinese botanical works (or to what appears to be tea) at a date prior to any known migrations from Burma to China or from China to Burma or Siam But in none of the very early supposed references to tea is mention made of eating the leaves as pickle or after being cooked into pudding or of making a beverage from them by means of boiling hot water. May not

Styles united for about 1rds of their length In some of the cultivated states, the cally is described as quite hair,

Improvement of Tea stock.

Lal .a creall and a se about

ATT AFIRD 254

253

THE HISTORY OF THE CHINA TEA

There is every reason to believe that, although the habitat of the tea plant may be somewhere on the Assam-Burman and Chinese frontier, the practice of preparing a beverage from its leaves existed for centuries in China before it was known in Ind a Apparently classical scholars have failed to find any allusion to the plant or to the beverage in the C. 254

The Tea-plant.

CAMELLIA theifera.

works of the early Sanskrit, Arabic, and Persian ariters. Tradition would seem to point to the plant having come from India to China, but the legend upon which this idea mainly depends is told by the Japanese and seems unknown to the Chinese themselves. In his interesting little work (On the Study and Value of Chinese Botanical Books) Dr. Bretschneider says that the plant is alluded to by a writer as early as 2700 The Beverage BC, and that a commentator, alluding to this fact, adds (in the 4th century A D) that by means of hot water a beverage is obtained from

TEA.

the leaves of the plant. Thus the literature of China allows of little doubt as to the beverage having been known in that country at least since the 4th century, and very possibly from a much earlier date. According to most writers it began to be systematically cultivated in South-Eastern China about that period. and we have a definite reference to the industry in the annals of the T'ang Dynasty, 793 A D, where allusion is also made to the article having been subjected to an imperial duty. Marpherson (History of European Commerce with India) remarks that Soliman, an Arabian

made in Chin in the 4th Century.

Japan in the 9th Century.

guese had dealings with the Chinese in the beginning of the 14th century, and it is probable they were the first to introduce ten to Europe. This is claimed, however, by some authorities for the Dutch, the article having been first shown in Amsterdam and thence sent to London The earliest authentic Furopean notice of tea occurs in Ramusio's introduction to

pany wrote to his friend in Meaco in the year 1615, asking for "a pot of

Tes was in

for a second present to His Majesty is recorded -

use in England in the 17th Century.

"22# To of thea at sos per fit For the two cheese persons that attend His Majesty, thea

Commercial supply in

Not, however, until the year 1677 did the East India Company take steps to secure a regular and commercial supply of tea. The order the London Directors then issued was "for teas of the best kind to the amount of 100 dollars" This order seems to have been exceeded, and the market accordingly glutted, for we next read of complaints regarding the

Imports

Ls d.

Dictionary of the Economic CAMELLIA The Tea-plant theifera. "Garraway's," and a duty was claimed from the vendor of 8d. a gallon TES In Pepys' Diary, under date of 28th September 1660, there occurs the entry "I did send for a cup of tea (a China drink) of which I had never ' .Indian Terms, give which mention is as in the time of William and Mary (1689), it was then subjected to a tax of 5s. a pound A duty levied, and 5 per cent on the value of the article ad valorem. This is perhaps the heaviest duty to which it has ever been subjected. As a result the Tea Monopoly. 45 1033 In 1703 the imports into Great Britain amounted to 105,000lb, and the article was sold at 16s a fb In 1704, the Chinese, imilating the monopoly granted by the Brich Comments. pany, endeavoured to a who alone would be perr city was characterised b monster in trade," but t bribe of £1,600 per ship was not, however, to be 1mports 1.000.000lbs. 40. a m cicisc, willi, ill audition, a customs due of 14 per cent. average price of the article From 1781 to 1707 the d remitted until it fell of the 18th century. Adulteration.

Macpherson has estimated that this amounted to 200 per cent, on the

excessive smuggling

The evils urged by

But the e instructive

In 1745 It cauces 30 per cent, with the result that whereas the sales for the five previous years had on an average been 768,520lb and yielded a revenue of £175,222, for the five succeeding years (after the reduction)

CAMELLIA The Tea plant theifera.

they were 2,360,000h and gave an annual revenue of £318 080. This extremely favourable result, instead of suggesting the advisability of further reduction, seemed to excite only the cupidity of the rulers to obtain from the supposed educated taste of the people a greater revenue 1750 to 1784 the duty was steadily raised until it attained the alarming proportion of 110 per cent, on the value of the article Smuggling and adulteration were of course renewed with greater energy than before But in 1784 the duty was again reduced to 12 per cent For the three TEA.

The result was that during these 25 years the sales stood stationary at an average of 21,000,000lb and yielded an average revenue of 21 million pounds sterling. The restriction in the sale of tea thus caused was greatly increased by the fact that the Last India Company still retained its charter as the sole importers of tea, but in April 1834 a new state of affairs began to dawn. An Act of Parliament had abolished ! the East India Company's monopoly, and free trade considerably lowered Tea Mon the initial price of tea. At the same time the ad vilorem duty was abolished and differential rates established, and all ' bohea teas" were subsected to a customs duty of Is 6d all, the better qualities of tea paying 25 6d to as a b 1 9 6 4 4 4

£2 500,000.

Removal of

ni sa fixed with

a fall a por

prese The writer has purposely passed over, in their chronological places, the incidents connected with the history of the Indian tea industry, deem------

THE HISTORY OF THE INDIAN TEA INDUSTRY.

Difficulties with China early began to make the British Government INDIAN TEA. realise the danger of having no other source of tea than China Ulti mately the whole energies of the Chinese section of the East India Com-

255

The Tea-nlant.

theifera

TEL Tes in America

1780

nany were concentrated in the tea trade. Friction with the Company soon gave went to loud outcrees in England which were resectored by the disaffection of America. Tea in fact became intimately connected with the saverance of the American Colony from the Crown of England Colonists discussed as Indians, boarded British ships, Jaden with heavilstaxed tea and threw it over-board, this was one of their first acts of open rebell on. The taxation of tea thus became a serious problem. and in a half-hearted way the East India Company responded to the wish of the Government that efforts should be made to a India Seed was accordingly

Tea send sent to India in

was handed over to Colonel K. small nursery in his garden

this garden ultimately became the Royal Botanic Gardens, Seebpore, near Calcutta Colonel Kyd, one of the founders of horticulture in India, and one of the earliest botanists of whom we have mention, has a fitting memorial in the centre of the Scebpore Gardens Reporting on his tea experiments he wrote to Sir Joseph Banks pointing out that the neighbourhood of Calcutta did not seem the most soited locality. In reply Sir Joseph, in 1788, addressed Warren Hastings as to the desirability

Discovery of 1910_1891

> y to Balfour. o the Indian The writer

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ords of the rorded from Assam or from Manipur is almost immaterial There seems no doubt whatever that Mr. Scott was the first F. rongan

Gold medal the Society

that specifich found its way to Dr Wallich's hands and is now, it would appear, in the Wallichian Herbarium in the Linnzan Society's Rooms,

ecure some the matter coa to ally person who would produce the best ap, o cea e god to ally person who would produce the best sample of Indian or Colonial grown tea Interest was thus awakened, but

years passed before any one claimed the medal. In 1826 the brothers Bruce, inspired by Scott according to some authors, and acting independently according to others, rediscovered the tea plant in Assam, in consequence Mr. C. A. Br. C. and acting inderts' gold of land medal, he for tea culti 1 in the person of C iscoverer of the tea Society

of India th ias been clearly pro-cu o, Mr. button that obott was prior to either of these

The Tea-plant.

CAMELLIA theifera.

pioneers, but there seems no doubt whatever that Major (and possibly also Mr.) Bruce, had prior claims to Charlton for being the re-discoverers

TEA. Operations commence d.

A committee was appointed, with Dr. N. Wallich as Secretary, to report on the situations best suited for the experimental cultivation of P-e Wallak and Payla and shas she avangment China ***

should conside Faster-

South Himab Mr. every

เลงา G, J. : feature of the Chinese cultivation and manufacture of tea, and to bring

away plants and seed. That gentleman had scarcely commenced his enquiries when he was recalled by the announcement that the tea plant had been found in Assam. Captain (afterwards General) Francis Jenkins had become Chief Commissioner of Assam, and he went with energy into the Bruces' discovery of tea. Had Mr Scott's still more early discovery received even a passing consideration, Mr Gordon would, in all likelihood, never have been deputed to China, and several years would have been saved, and according to many planters the curse of Assam-China tea-would have never found its way there As it was, Dr Wallich at first refused to accept General Jenkins' plant, as being the true tea-13 _ _ . De Well able he are a all yielding species, - 1-

probability paid l he appears to h

that for

and Griffith.

From once her sended in La

given him. In the identification of the Assam plant, a commission was appointed in 1836, consisting of Drs. Wallich, McClelland, and Griffith to visit Assam and report on the tea said to be found there. One of the most CULIC

Tea Commission appointed. 1236.

of a wou that tried. Drs Wallich, Royle, and Falconer continued almost to the last to contend that the Himálayan localities would be preferable, but the claims of Assam were eventually recognised and urged by Drs. McClelland

strong advocates for the pure China plant, and the localities stituted by

them for that plant were certainly preferable to the hotter and damper | Seed sown regions of Assam. Teat the of n the Cale tto Dotan's Condone from the

CAMELLIA The Tea-plant. therifera. TEA. In the tea-plant and there are a second of the second of th

First Assam Garden, 1835 Indian Tea sent to England, 1838,

its existence, and its shares fell so low that they could scarcely he sold.

About 1852 its prospects began to improve, and with its success the tea indur
rusht

ed to in C in S

and the between 1835 and 1840 to introduce tea into Southern India, but little interest was taken in the experiments previous to 1865 (Robertson's

Tea Disaster, 1865-67.

> Society of Arts Dr White has shown that the heavy expenditure on cultriation and manufacture has been so effectively reduced (and that it may be even still further lowered) that all fear of competition with China may be said to have been removed. But while this is so many planters hold the opinion that a danger exists in the outry for reduction, since the point may be thereby reached of defective cultivation. China, once sup-

> her highest level. The latest returns show the shipments from China for this year as 30 million pounds below those of the preceding year. Hitherto the attention of the Indian planter has been directed to compete with China in the London market, while all the time the imports into India of chear China the china of th

Growth of Indian Tea Trade.

The Tea-plant.

CAMELLIA theifera. TEA.

The British Government commenced to record separately Indian teas in 1852, but the table has been drawn up from 1864-65 to 1885-86. Briefly, it may be repeated the exports from India were in 1838 declared to be 485b, while in 1886 they had attained the proportion of 68,784,249b

| | | | J | ı | 2 | 3 | 4 |
|----------|-------|---|------|---|--------------------------------|--|--|
| | YEAR. | | | Quantity ex- ported to all countries from India in | Value of the same in Rs. | Imports into Great Britain of Indian tea (from 1873 including Ceylon) in th. | Per centage of Indian to China teas consumed in Great Britain, |
| 1804-65 | | - | | 3+457+439 | 29,02,840 | 2,510,000 | 3 to 97 |
| 186,-06 | | | - 1 | 2,759,157 | 27,50,550 | 5,133,000 | 4 to 96 |
| 1566-67 | | | - 11 | 6,357,035 | 36,03,208 | 7,084,100 | 6 to 04 |
| 1867-68 | | | | 2,811,427 | 68,69,250 | 8,132,400 | 7 to 93 |
| t 968-69 | | | | 11,450,213 | 95,13,764 | 10,443,320 | to to go |
| 1569-70 | | | . | 12,754,023 | 1,03,78,830 | 13,148,000 | 11 to 89 |
| 1870-71 | | | | 13,232,232 | 1,12,05,167 | 15,351,600 | t1 to 89 |
| 1871-72 | | ٠ | | 17,187,328 | 1,45,49,846 | 16,042,000 | 13 to 87 |
| 1872-73 | | | | 17,789,911 | 1,57,76,907 | 18,424,000 | 15 to 85 |
| 1573-74 | | ٠ | • | 19,324,235 | 1,74,29,256 | 17,377,900 | 13 to 87 |
| 1574-75 | | | | 21,137,087 | 1,93,74,292 | 25,605,100 | 16 to 84 |
| 1875-76 | | | | 24,361,599 | 2.10.64.168 | 25,605,100 | 17 to 83 |
| 1870-77 | | ٠ | | 27,784,124 | 2,60,74,251 | 20.151.700 | 19 to 81 |
| 1877-78 | | | | 33,459,075 | 3.04 45.213 | 31,883,300 | 23 to 77 |
| 1978-79 | | | | 34,432,573 | 3,13,84,235 | 36,007,100 | 22 to 78 |
| 1879-50 | | | | 35,174,521 | 3,05,10,200 | 18,383,700 | 28 to 72 |
| 1880-81 | | | | 46,413,510 | 3,05,42,400 | 45,764,900 | 30 to 70 |
| 1881 S2 | | | | 45,091,725 | 3 60.01.161 | 21.0So.300 | 31 to 69 |
| 1882-83 | | | | 57,765,225 | 3,60,04,065 | 61,666,500 | 34 to 66 |
| 1883-84 | | | | 59,911,703 | 4,08,38,805 | 65,731,600 | 37 to 63 |
| 1894-85 | | | | 64.162.05 | 4,04 47,592 | 68,159,600 | 39 to 61 |
| 1885-86 | • | • | | 68,784,249 | 4,30,61,335 | 76,585,000 | 41 to 59 |

oute distinct from the fatty oil.

Camphire, the sweet-smelling Camphire of Solomon, is, according to some authors, the Henna of Indian writers; see Lawsonia alba, Lamk, LYTHRACEE. Camphire is by other writers a synonym for Camphor.

CAMPHOR

Forms of Camphor.

CAMPHOR.

257

Camphor.

CAMPHOR, Fnp; CAMPHRE, Fr, KAMPHER, KAMPFER, Germ, CAN-FORA. It.: ALCANFOR, Sp Ve-- -

Guide, Bot Gardens and Arboreum, 120, 125

Camphor - The name 'Camphor' is applied to various concrete, white. odorous, and volatile products, all of vegetable origin and possessing similar properties They would appear chemically to be secondary formations from the volatile oil of the particular plant from which they are derived. A number of plants belonging to widely different families are accordingly found to yield this substance. Of these, however, three may be regarded as important, but only one of these commercial at the present

FORMS OF CAMPHOR

FORMOSA. 258

BARUS

250

1st -The Formosa or Chinese Camphor, and Japanese Camphor. This is the most important—the commercial form of Camphor. It is pre-

Island of Posof the C accordir

Sikok, the mild damp sea-air of that island being apparently favourable to the growth of the tree In the districts of Satsuma and Bungo a considerable ame - of Com-L -

and -The B known as Kapl and, in the Ind

in Sumatra), also MALAY CAMPHOR. BARAS It is obtuned as coarse crystals, formed naturally in the stems of Dryobalanops

Camphora, Colebr (D aromatica, Gartin), a tree closely allied to the C. 259

Bares and Ngai and Perfumery Camphors.

CAMPHOR. Indian sal and a member accordingly of the Natural Order Diptero- FORMS OF.

destroyed, being cut up into small splinters in the search for the camphor crystals. It is stated that only about one-tenth part of the trees thus

Camphor are chiefly found in the interior of the stem, often existing in of the tree, from a foot to a foot and a half long. More frequently they of the tree, from a root to a root and a company, especially in the knots fill the hollows and interstices within the timber, especially in the knots.

The old trees are generally the most productive; an average tree is said to yield Itlb

> BITIMEA. 260

the world with camphor. Wherever trees are cut down this weed springs up, and often to the exclusion of almost everything else," Dr. Dymock has recently drawn attention to a camphoraceous Blumea common near Bombay, and used by the country-people to drive away fleas. (See Blumen,

Vol I, B 539)

Malayan Peninsula and cultivated in many parts of India. There are, C. 261

26

CAMPHOD

History of Camphor.

in addition, a number of other camphors, less intimately related to India. such as Negoli Campion, prepared from the flowers of the butter OFFINE BERGAMOT CAMPHOR, BARASA CAMPHOR, SASSAFRAS CAMPHOR and ORRIS CAMPBOR

In India, in addition to the species of Blumea above enumerated as vielding Ngai Camphor, there are many plants which smell strongly of camphor, some of which would most probably be found to yield that sub-

HISTORY

262

History of Camphor - Having now very briefly discussed the sources of the various kinds of Camphor, it may not be out of place to say something here of the history of that substance The authors of the Pharmas cographia inform us that there is no evidence that Camphor was known to Europe during the classical period of Greece and Rome mention of the substance "occurs in one of the most ancient monuments of the Arabic language, the poems of Imru-Kais, a prince of the Kindah

you a seem from the above description that by the term apakva karpura, was probably meant the C. 262

Trade Returns and Commercial History.

CAMPHOR HISTORY.

Camphor obtained from Borneo from the trunk of Dryobalanops matica, and by sublimation from Med . 222). Dr. accepts this opin the Sanskrit writ modern Campho

the Sanskrit writers, and Camphor referred to may ance which at the period India or imported from appear to have been suffiit the strongly camphora. . n the first plant resorted

to as a substitute or adulterant for the prized Camphor of Sumatra a matter of fact, this Camphor is much more nearly related to the Malayan than to the China Camphor, and even at the present day it is ten times the price of the Formosa Camphor, and is extensively consumed in China, partly as a medicine and partly in perfuming the finer qualities of Chinese ink. Moodeen Sheriff mentions four kinds of Camphor as met with in the bazars of South India, vis, (a) Kafure gaisuri, (b) Súratí káfúr, (c) Chíní-kafúr, and (d) Batás-káfúr.

TRADE RETURNS AND COMMPRCIAL HISTORY.

Commerce.—While some of the less important camphors do, to a limited extent, reach Europe and India, the commercial or Chinese form is that which has been called "Common Camphor" This arrives at the English and Indian markets chiefly in a crude state, and is in both countries resubTRADE. 263

than the Formosa Camphor. D mbn and C

chiefly from China, is worth not more than R40 to R65 per cwt. This enormous difference is accounted for by the reputation (scarcely merited) which the Bhimsaini kind enjoys of peculiar excellence" (Para. 16,

pages 9 and 10) Of Borneo and Sumatra Camphor probably not more than 2 or 3 cwt. are annually imported into India.

mali 350g. view the 22

CAMPHOR.

Trade Returns and Commercial History.

INDIAN TRADE IN CAMPHOR The Import and Re-export trade in Camphor between India and foreign countries for the past seven years was as follows —

| | | | | | | VALUE OF | CAMPHOR | | |
|---------|------|-----|---|------|-----------------------|-------------|-----------------------|-------------|--|
| | Year | | | | IMPORTED | INTO INDIA | RE EXPORTED FF | | |
| | | | | | Bhimsaini or Barus | Other kinds | Bhimsaini or Barus | Other kinds | |
| | | | - | | R | R | R | R | |
| 1879-80 | | | | | 20,909 | 5,34 001 | 2,316 | 23,174 | |
| 1880-81 | | - : | | | 22,924 | 5 53 732 | 140 | 26,559 | |
| 1881-82 | | | | | 38 574 | 5,52,335 | 1,640 | 21,138 | |
| 1882-83 | - : | - : | | - 11 | 43 618 | 8 68 794 | 529 | 25 231 | |
| 1883-84 | | - | | - 1 | 38,579 | 6,27,278 | 790 | 28 730 | |
| 1884-85 | | - | | | 35 501 | 6 S3 333 | 270 | 13 432 | |
| 188, 86 | | | | - | 25,944 | 6,53,545 | 270 N:! | 16,779 | |

| i | ! 1 | | | Analysis of E | XPORTS FOR 1885-86 | |
|-------|---|---|-------|---------------------------|--|--------------|
| Year. | | | VALUE | Country to which exported | Province from which exported | |
| | 1879-80 1880-81 1881-82 1882-83 1883-84 1884-85 1885-86 | : | : | 9,475 6 682 | R Ceylon 4,900 Other Countries 1150 TOTAL 6 05 | Madras 4 448 |

Indian Refined 264

the process as practised in Bombay. "The process of resublimation is a peculiar one, the object being to get as much interstitual water as possible into the camphor cake. The vessel used is a tinned cylindrical coper drum, one end of which is removable; into this is put 14 parts of crude camphor and 21 parts of water, the cover is then luted with clay, and the drum, being placed upon a small furnace made of clay, 15 also luted to the top of the furnace. In Bornbay four of these furnaces are

Penfication of Camphor.

CAMPHOR.

Ind., st. Ed., 549). This same practice seems to be followed at Delhi and at a few other cities in India, but the method is crude and unsatisfactory, when the purified articles compared with that imported into India from Europe. The Furopean process of rethning camphor was long kept a secret, and towards the end of the seventeenth century the entire camplior of Europe had to be sent to Holland to be sublimed. A monopoly was also held for some time in Venice, but at the present day camphor-refining is largely accomplished in England, Holland, Hamburg, Par's, New York, and Philadelphia

European Refined, 265

by means of a fire, where flame might ignite the gas given off during the process of sublimation, dishes of fusible metal, kept warm by a furnace below the room, are used. The heat is suddenly raised from 120° to 190° C, and kept at that point for half an hour, so as to expel the water from the camphor. The temperature is then rused to 204° C, and maintained at that point for 24 hours. When the crude camphor has melted, the sand

The rationals of the process consists in preserving the temperature uniformly at the point of volatilization; the quicklime retains resin or empyreumatic oil, the iron fixes on any sulphur that may be present,

Camphor Piants, 266

India. In the report of the iz-83 it is mentioned that a it well. It seems likely that, rupees worth of China Camily, since there is every reason were made, the tree could be

sиссезьтин**у** питочисеи

The amount of Barus Camphor consumed in C. 266

Chemical Formula for Camphor.

India is not sufficiently great to tempt experiments being undertaken with Dryobalanops Camphora, but the extended cultivation and manufacture of Blumea and China Camphors would seem highly desirable,

CAMPHOR OIL.

01L 267 Oil of Campion—There are two very distinct substances known by that name in commerce
the first and most important is the electrosis or
campior oil of Borneo
This is obtained by tapping the trees. Some
times this accumulates to such an extent that [as with the South American
companies tree] the trunk, no more able to resist the pressure of the fluid,
pontaneously bursts open or has its tissue broken into large internal
chambers, producing while this occurs a loud noise, "as if the tree were
rent in thain." The Pharmacographia states that Molley, in cutting

distinct and should not be phor-oil of Formosa. This

phor-oil of Formosa. This is a brown figure, noticing in solution an abundance of common camphor,

CHPMICAL AND MEDICAL PROPERTIES OF CAMPHOR

Chemstry—It is not necessary to enter into this subject in great detail For a full account of the chemistry of Camphor the reader is referred to works on chemistry, but more particularly to the Pharmacographia and the United States Dispersatory, as these are more likely to accessible than the numerous and scattered papers in which this subject has been as a few months of the control of the con

camphor When mated with testing or concrete oils, camphor often partially or completely loses its odour The formula given for this form of camphor is C₀H₁₀O, by treatment with various reagents it yields a number of interesting products Prolonged boiling with intra and ordiner the camphor into Cemphorous C₀H₁O, and Camphorous oddies the camphor into Cemphorous carlo C₀H₁₀O, and Camphorous collections of the control of the cont

t C₁₀H₁₈O It is some d does not consequent g it It is also heavier,

having the sp gr 1 009 It is easily pulverised without the aid of alcehol, it is, in fact, a more compact and brittle substance than ordinary C. 268

268

Medicinal Properties of Camphor.

CAMPHOR.

camphor It requires for fusion 198° C. In optical properties an alcoholic solution is found to be 121° destrogyre. By the action of intracertification of the second optical complex and by continued outerties are regarded as

CHEMISTRY.

more nearly related to

and diffe

phor is converted into ordinary campion

MEDICINE. 260

secondary, that of a sed-titve, anodyne, and antispasmodic. In large doses it is an acto-narcotic poron. Cambor his been extensively used in the advanced stages of fevers and influrnation, instanty, asthmy, angina pectors, hooping-cough, and pilpitations connected with hypertrophy of the heart, affections of the gentiou-invry system, comprising dysmenor-thosa, mynphonania, spermatorrhers, cancer, and irritable striets of the userus, chorde, mooninence of urine, hystem, rheumitism, gangene, and doubtful results it is regarded as a matched to stripching, but the doubtful results it is regarded as a matched to stripching, but the doubtful results it is regarded as a matched to stripching.

be discussed here at great detail. The reader is therefore referred to the Pharmacopeus of India, pp. 109, 193, and other standard works on materia medica. As having a special bearing on India, however, the following extract may be republished from Waring's most useful little book, Basar Medictions—

"In chronic rheumatism, in addition to its use externally, it may be

Care, however, is necessary to prevent the patient inhaling the vapour, which is of comparatively little consequence when simple water is used.

"In asthma, camphor in egrain doses, with an equal quantity of asafentad, in the form of pill, separated every second or third hour during a paroxysm, affords in some instances great relief. Turpentine stupes to the chest should be used at the same time. Many cases of difficulty of breathing are relieved by the same means. These pills also sometimes relief to the chest should be used at the same time.

 chest at nights, the strength of addition of some

bland oil

"In rheumatic and nervous headaches, a very useful application is one ounce of camphor dissolved in a pint of vinegar, and then diluted with one or two parts of water. Cloth's saturated with it should be kept constantly to the part.

"In spermatorrhora, and in all involuntary seminal discharges, no

CAMPHOR

Medical Properties of Camphor.

MEDICINE

medicine is more generally useful than camphor in doses of 4 grains

pill twice or three times a day, according to the severity of the symptoms, will sometimes afford great relief. In each of these cases it is important to keep the bowels freely open.

"In painful affections of the uterus, camphor in 6 or 8-grain doses often affords much relief. The liniment should at the same time be well

teet of over the region of the heatt. It should be discontinued if it causes headache or increased heat of the scalp. Its use requires much discrimination and caution.

"To prevent bed sores, it is advisable to make a strong solution of to bathe, likely to

process of

sutant Surgeon Yasunah Rai, Multan). "It is an irritant and rubefacient, good for a cold in the head with coryza, summer diarrhea." (Brigade Sargeon W. R. Rice, Jubbalpore). "Largely used as a liniment for muscular pains. Is a good expectorant" (Sargeon R Gray, Lahore). "Used in 30 et 4 grain does and mixed with about 1 grain of extract of belladonna. I have found this to be of very great value in neutalgic pains."

| | | - | | lia | ng-ilang. | | | CANANGA odorata. |
|-----|--------------|------|--------|----------------------------|---|-----------|------------|---------------------|
| ; | ; | • | | 1 , 1- | . 1 . | | | MEDICINE. |
| geo | n Si chol | ub (| hunder | Bhutticharj on H. D. Ma | ticles against ins i, Chanda, Centr sani, Karachi). | al Provin | es) "Usefi | al i |

fourth hour in cholera, good

sistant Chuna Lat, Jubbulpore) "Is taken in large doses to procure abortion" (Surgeon-Major D. R. Thompson, Madras) "Camphon is a stimulant, antispasmodic, sedative to the genito-urnary system, and parasitede The spirit of camphor is a useful remedy in cholera, in 1 to 5-drop doses" (Assirtant Surgeon Nundo Lat Glose,

Bankspur) "Camphor Used in 3 or 4-grain doses and mixed with about 1 grain of extract of belladonna. I have found this to be of very

DOMESTI .

27I

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when placed in the soil
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Camphora glandulifera, Nees, see Cinnamomum glanduliferum, Meissn.; LAURINEE

Canada Balsam, see Abies balsamea, Atton.; Conferm.

CANANGA, Rumph.; Gen Pl, I, 24.

Cananga odorata, H. f. &T. T., Fl. Br. Ind., I., 56; Anonace E.

The ILANG-ILANG of European perfumers.

Ziii Enco..., , 4--, v

passages. In the cits use, and think geon S. H. Browne.

that when given in to-grain doses every

C 0

| 94 | Dittionary by the Devices |
|-----------------------|---|
| CANARIUM commune. | |
| ILANG- ILANG | Habitat.—A large evergreen tree of Burma (Ava and Tenasserim), distributed to Java and the Philippines Cultivated in many parts of |
| 01L. 272 | |
| | |
| Ì | |
| | CANARIUM, Linn.; Gen Pl , I., 324 |
| 273 | Canarium bengalense, Roxb; Fl Br Ind., I, 534; Burseracen |
| | Vera — Gogul dhup, Nepal, Narockpa, Lepcha, Tekreng, Gabo; Bis- jang, dhuna, Ass |
| | Reference - P t 2 ' 70 C U Kurs, For El Burn, I , Hort Sub Cal , try, Cocke, Him Bot , 177, Cocke, |
| сим. 274 | Habitat.—A tall tree, with a straight cylindrical stem, it is met with in the eastern most zone, eastern Himalaya, Bengal, and Burma Gum.—Yields a brutie, amber-coloried resin, resembling copal, which is used as incense. The natives see little value on it. In Calcutta bazars |
| TIMBER 275 | * * * * * * * * * * * * * * * * * * * |
| MEDICINE. | |
| 276 F00D | swellings Food —" Fruit edible |
| 277 TIMBER. 278 | Structure of the Wood "Strong and durable, used for common house building" (Trimen). |
| 279 | C. commune, Linn , Fl Br Ind , I , 531. |
| | JAVA ALHOND TREE. |
| | Vetn — Jangali badam, Hind , Jangali bidana, Cutch , Kagli mara, kagga libiya, jawa badamiyanne, Kan , Canari, Mala , Rata kakana, Sing. |
| | References - Roxb , Fl Ind , Ed CBC , 504 , Vorgt, Hort Sub Cal , |
| | |
| | |
| | V , 298 |
| | intr |
| 280 | long |
| | Phr. |
| | C. 280 |

Bengal Incense: Elimi,

CANARIUM

Blanco, a botanist of Manilla, described in 1845 under the name Icica Abilo, but which is completely unknown to the botanists of Europe Blanco's description is such that in either of the old genera Icics or " .. and Hooker in that of Barsera, in fact, even the order to which it belongs is somewhat doubtful " Vlanilla Elemi is a soft, resinous substance, of granular consistence Manilla Elem. , more 281 enders mpurivellow tint. It has a strong and pleasa " yet withal somewhat terebinthing ----ugher temperature fuses into a clear . (15th Ed), page 536, says Manilla Elemi is conjecturally referred to Canarium commune." In their Medicinal Plants Bentley and Trimen give a detailed description of the niant. They eas "It is also only and a fa a and har he by Blanco, should be even referred to the Burserace. The gum is used principally in the manufacture of varnishes, also in felting and in medicine Oil -The nut yields a semi-solid oil on expression, similar in appearance to cocoanut oil It is used for culinary purposes, and is regarded palat Lin 284 Celebes If eaten fresh or too frequently, the nuts often produce diarthea (Drury).

| CANARIUI strictum | 1 | Black | Dai | mma | Tree | _ | | |
|----------------------|-----------------------------|-------|-----|-----|--------|-------|--------------|-----|
| 285 | Canarium strictum THE BLACK | | | | Ind, I | . 534 | , Beddome, ! | 128 |
| i | Ve | | | • | ^ | | , 6 | n |
| | Reformer | | . , | ٠, | ^ · · | • | | • |

Habitat -A tall tree of South India Common about Courtallum in the Tinneyelly district and in Kanara, GUM

Gum -It yields a brilliant resin called the Black Dammar of South

ten years between the months of April and November, and the resin is collected in January

*This substance occurs in stalactime masses of a bright shin ng colour when viewed en masse but translucent and of a deep reddish brown colour when held between the eye and the I ght, homogeneous with a vitreous fracture, partially soluble in boiling alcohol, and completely so in oil of turpentine (Plarm Ind)

BLACK DAMMAR 287

> MEDICINE Burgundy Pitch

288

the manufacture of bottling wax varn shes, &c. Its colour when in solu tion is pale if compared with its dark tint when in mass. Thus, though insoluble in spirit, its solution in turpentine forms a tolerable varnish When submitted to destructive distillation it yields about 78 per cent of oil, resembling that obtained from common colophony, but I fear, in the majority of its possible applications, it possesses few advantages over

es the nearly Sunt nmon 1 with

t and colourless as glass, in such amount that a single firm turns out 60 tons per week "

Medicine -The resin is used med cinally, according to Dr. Bidie, as a substitute for Burgundy Pitch in making plasters

Special Opinions - & Bathing in a tub painted inside with dam mar is supposed to relieve the irritation of prickly heat '(Surgeon Major A S G Jayakir, Muskat Arabia) 'Employed as a liminent with gingelly oil, in theumatic pains' (Surgeon Major F J L Ratton, Salem)

The Sword bean.

CANAVALIA ensifor mis

CANAVALIA, Adini (PDC); Gen Pl, I, 537
Canavalia ensuformis, DC; Fl Br. Ind., II., 195; Wight, Ic, 1
757: Leciminoss.

289

200

201

202

FOOD

293

SWORD BEAN Sometimes called Paragonian Bran.

Syn -C GLADIATA, DC, DOLICHOS GLADIATUS, Willd, as in Rorb, Fl. Ind, Ed CBC, 559, D ENSIFORMS Linn

Vern - Malham shim, melhun, Beng , Tihon, Santal , Sufed or ldl kud sumbal, HIND , Sem, PB & N-W P , Garari, Mar , Garara, Box ,

References -Thrastes, En Cepton Pt. 88 Dals & Gibs Bomb Ft.

p 144 Fig T

stitious belief that it will protect their property from plunder (Smith)

There are several forms of this plant met with in India, the seeds and flowers being of different colours (Drury). These according to the Flora of British India, are referred to three distinct varieties—

Var 1st, vrosa, W & A, Prod, 253, Dits & Gibt, Bomb Fl, 69, Dolicho svrosas, Rosb, Fl Ind, Ed. CB C, 559 Pods often 24 inches long, 46-seeded Speaking of this form, Roxburgh says 'I do not find that any part of this species is in any shape useful to the natives or others, indeed, the natives of Coromandel, where the plant is common, reckon it poisonous, which is corroborated by Van Rheede "This is known in Bengal as Kathishim, or Kala-shim and Gaivara (Gowara) in Bombay

Var 2nd, turgids, Grah in Wall Car C Stocksu, Dals & Gibs, Bomb Fl, 59 Pods large and turgid, 3 to 5 inches by 13 to 2 inches Var 3rd, mollis Wall Found in Southern and Western India The

pods are smaller than in either of the above, when cultivated they are tender and eaten like French beans.

Food—The young, tender, hall grown pade, apparently of only var 3 are actually caten, but these constitute the so-called French beans at the tables of Europeans Nituves also eat them in curry. The form with large white seeds is considered the most wholesome. Some five varieties are reported to be cultivated in Lucknow, of which the form known as hitms, a white narrow-podded variety, is considered the best. Mr. Cameron informs the writer that the seeds of this pulse are highly relished in Mysor. Atkinson writes of the North-West Provinces that the sem is "consumed by all classes."

Professor Church gives the analysis of this pulse (p 144), and adds that its nutrient ratio is 1 22 and the nutrient value 80

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| Dictionary of the Loventham |
|--|
| White Cinnamon, Canes |
| Canavalia obtusifolia, DC, Fl Br Ind, II, 196 |
| References — Thwastes En, Ceylon Pl, 88, Vosgi, Hort Sub Cal, 235, Brury, Us Pl 105, Balfour, Cyclop, Kew Cat, 44 |
| Habitat —Met with on the coasts of the Western Peninsula, Ceylon, and the Malaya Peninsula "Is a useful binder of loose sand" (Balfour) |
| CANELLA, Sw , Gen Pl , I , 121, 970 |
| Canella alba, Murray, DC Prod, I, 563; CANELLACEE |
| White Cinnamon Eng. Canelle Blanch, Fr. Weisser Zimmet, Germ Canella Bianca, It Canella alea, Sp. Canella Blanca Sp. |
| References -1 o gt Hort Sub Cal 88, Pharm Ind, 25 Fluck & Hanb, Pharmacog 73 U S Dispens, 15th Ed, 317, Year Book of Pharmacy 1873 & 23 Sponts Excyclop 1419 Smith Dic, 84, Treasury of Botany Hanbury Sc Papers, 333 Kew Cat 14 |
| Habitat —A West Indian aromatic plant, the bark of which is imported into India, and is sold by druggists, the tree might be cultivated in India. |
| OH—"An essential oil, etroneously called 'white cinnamon,' is obtained by the aqueous distillation of the bark, it is a mixture of caryophyllic (engenic) acid, an oil resembling capiput, and an oxygenised oil "(Spons, Encyclop) It is a rare article, not known to commerce |
| Medicate —The bark is met with in rolls or go lis two or three feet in length, having a bitterish acrid peppery taste. The odour is something I ke a mixture of cloves and cimianon. The bark is an aromatic stimulant used to a limited extent in combination with other atticles in constitutional debibity, dyspepsia, scury, &c. (Planm Ind.) In the We I Indies it is used as a condiment and has some reputation as an anti-scorbutic. |
| CANES. |
| Canes |
| CANNE, Fr , ROHR Germ , Bhate HIND , Nathur, Guz |
| The species of the genus Calamus—a genus of climbing palms— sjields the canes of commerce. Few plants are more useful to the hall tribes of India and the Malay than are the various forms of cane yet very little of a definite nature is known as to the pecul ar properties and uses of the individual species. They afford Dragon shood and the "Malacca" and "Rattan Canes" of commerce but it is probable that each of these articles is obtained from more than one species of Calamus Reeds and small bamboos are sometimes, but incorrectly, spoken of as canes |
| The spa- |
| stunted er times, by |
| trees of the torest, they ascend as gigantic cl mbers, often attaining to as much as 600 feet in length. The stems, leaves, and tendrils are covered |
| |

Asiatic Uses of Canes.

CANES.

L . L 11

pieces The roots and young sprouts are eaten as vegetables and somewhat resemble asparagus. Canes one their value to their great strength, and more particularly to the strength of the outer layer of woody structure As substitutes for ropes they are invaluable, and in some respects even superior to ordinary ropes. For walking sticks and canes, and for spear and lance shafts, they are in great demand and are justly popular, lightness, strength, and uniform structure and size, are properties of the greatest importance.

Substitutes for Ropes 200 Shafts. 300

The A .- alter and a prose or adapt autons a One of the most

ane-bridges 301

parallel canes forming the pathway, the canes being knit together with bamboo or bark, so as to constitute a hand nor more than 18 inches in breadth, through which the rushing water may be seen below. The rahing affords additional support, it consists of two canes carried about three or four feet above the pathway, one on either side. These are here and there connected by perpendicular canes passing under the pathway, and the whole structure is bound together by a network of bark-ropes or smaller canes. With the weight of the traveller the bridge bends until it is often alarmingly near the water, and to prevent the rahing closing on the person crossing the bridge, barriers are thrown across here and there, about 18 inches above the pathway, similar stays are also carried over head. These barriers constitute the chief difficulty in crossing a cane bridge, for on raising the foot, the swaying structure and the rushing

Bridges.

Ropes

and indeed throughout the Eastern Islands, vessels are furnished with cables formed of cane twisted or platted. This sort of cable was formerly extensively manufactured at Malucca' (Royle, Phoeus Plants). Dampier says "Here we made two new cables of ratians, each of them four inches about. Our captain bought the ratians, and hired a Chinese to

them down, not can we carry them out but by placing two or three boats at some distance asunder, to buoy up the cable while the long boat rows

entire and cut Useful chairs, sofas, and couches are made all over India

from cane, and cane punkha ropes are almost in universal use. In Bengal

baskets (dhama) are made of entire canes by twisting the canes round

gether, by means of cane-strings, the canes being arranged so as to be flat

1 - - - - - 1

THE EUROPEAN USES OF CARROLL OF THE COMMENT

and parallel.

C. 316

CANES.

Baskets

302

Chairs. 303

Mats 304 Cane-work. 305

Walking

Sticks

306

| Umbrella handles | They are valued on account They are extensively used as |
|--|--|
| 307 | as a substitute for whalehone |
| Umbrella ribs | such ribs costing only from 1d to 21d instead of 2s 6d to 3s for whalebone. |
| 303 | Cane is also extensively employed in saddlery and harness, and a wicker- |
| Saddlery. | work of rattan is now used in the construction of the German military |
| 300 Harness | helmas his not son 1 1 1 |
| 310 | |
| Furniture. | |
| 311 | or the central core in Europe this central portion is saved, a patented |
| Centralaxis | machine being used to split the rattans which cuts off the outer layer in |
| 312 | bands of any required size or thickness, while leaving the central core in |
| Window | the form of a perfectly round and even rod. This rod is utilised in the |
| 313 | • |
| Dyed cane | |
| 314 | concept, or the race that the Nagas and other hill tribes of Assam dye |
| Fibre from cane 315 Cane- mattresses 310 | human and goats harr a beautiful searlet, as also tint with the same colour the outer silcous layer of the rattain cane. Bands of stained rattain they use for decorating ear rings, bracelets, and leggings. Prepared strips of rattain are extensively used in Europe as in India for caning furniture, but a comparatively new and increasing trade in rattain is the construction of baskets, which are rapidly displacing willow baskets; these are used in cotton-mills, sugar refineries, and other factores, as well as employed extensively by Railway Companies and by gardeners, &c. Rattan baskets are peculiarly adapted for carrying carboys containing acids, since the sikina of the cane is not acted on by acids (Spouts, Eucylep). The waste product, after stripping the cane, is, by certain manufactures, reduced to a fibre, and in this forms largely used for stuffing mittresses. Cane mattresses are in great layour on the Continent, taking the place of the corr of India. |
| , | TRADE RETURNS OF CANES |

Very little can be learned regarding the internal trade in rattan canes; but, from the fact of the imports (which come chiefly from the Straits Settlements) into Calcutta, Madras, Burma, and Bombay, far exceeding the exports, it seems that with improved facilities of communication a trade might easily be opened up with Eastern Bengal, Assam, and Burma which would to a large extent check the importation, from foreign countries, of a product of which India has herself an unlimited amount. The following

Trada Dehirne

CANES

summary of the foreign trade in Canes and Rattans vill be found instructive -

Foreign Trade in Ca es and Ratta is

| YEAR. | Імес | RIS | EXPORTS AND RE | |
|---------------------------------|-----------------|---------------------|------------------|--------------------|
| | Quant to | Value | Quant ty | Value |
| | Cut | R | C t | R |
| 1879-80 | 206_7 | 1 93 035 | 7 483 | 73 582 |
| 1850-81 188 -8 | 2 164 29 559 | 2 92 754 | 16 346 23 801 | 2 06 544 |
| 1832-83 | 24 603 | 2 46 476 | 14 244 | 1 33 061 |
| 1553-54 | 29 83 | 2 51 203 | 20 836 | 34 884 |
| 1884-85 188 ₃₋ 86 | 33 408 | 3 0 675 1 77 536 | 14 33 6 455 | 2 33 734 56 844 |

Deta 1 of Imports 1885 86

| Province nto which mported | Quant ty | Value | Count y whence mported | Quant ty | Value |
|---|------------------------------|------------------------------------|---|----------------------|-------------------------|
| | Cwt | R | | Cvt | R |
| Bengal Bombay and S nd Madras Botish Bu ma | 7 94 9 871 62 2 986 | 66 98 79 095 8 7 3 23 530 | S am Stra ts Settlements Othe Countries | 4 3 20,350 450 | 3 58 1 72 886 498 |
| TOTAL | 21 2 3 | 77 53 ⁶ | TOTAL | 2 2 3 | 77 536 |

Detail of Exports 1885 86

| P ov nce f om which exported | Quantity | Value | Country to wh ch expo ted | Quant ty | Value |
|--|------------------------------|--------------------------------|---|---------------------------------|---|
| | Cwt | R | | Cvt | R |
| Bengal Bombay Madras B tish Bu ma | 1 5 5 623 637 3 Jon | 20 770 2 406 54 3 354 | Un ted K ngdom Un ted Sta es Italy Cape Colony Mau us Othe Count es | 3 827 427 63 469 87 | 35 030 8 435 60 6 28 080 5 0 |
| TOTAL | 20 836 | 34 884 | TOTAL | 6 485 | 56 844 |

The reader is referred for further part culars to the format on g ven

Substitutes for canes 317 Whan see canes 318

| CANES | European Uses of Canes. | | | | | |
|---|---|--|--|--|--|--|
| | out the anchor" Ropes are regularly made in China by splitting the | | | | | |
| Baskets 302 Chairs 303 Mats | , | | | | | |
| 304 Cane work 305 Walking Sticks 300 Umbrella | chairs made in this way being light and cool. A strong and durable floor mat for office purposes is constructed of small entire rattans, bound together, by means of cane-strings, the canes being arranged so as to be flat and parallel. THE EUROPPAN USES OF CANES THE VALUE OF CANES AND ADDRESS OF CANES AND ADDRESS OF CANES AND ADDRESS OF CANES | | | | | |
| handles 307 Umbrella ribs 703 Saddlery 309 Harness 310 Furniture 311 Central axis 312 Window blinds 313 Dyed cane 314 | They are extensively used as whalebone, and a wicker- nad with a wicker- nad a wicker- nad a wicker- nad with a wicker- nad a wicker- nad with a wicker- nad a wicker- nad with a wicker- nad with a with a wike place of the central portion is saved, a patented machine being bands of an patented with a | | | | | |
| Fibre from cane 315 Cane-mattresses 310 | these are used in cotton-mills sugar rehieries, and other factories, as all as a mail | | | | | |

Trade Returns

CANES

summary of the fore gn trade in Canes and Rattans vill be found instructive -

Fore gn Trade in Canes and Ratta is

| YEAR. | Імес | RTS | EXPORTS AND RE | |
|--------------------|------------------|----------|------------------|-------------------|
| | Quant ty | Value | Quant ty | Value |
| | Cwt | R | Ct | R |
| 1879-So | 20 617 | 1 93 035 | 7 483 | 73 582 1 6 363 |
| 1880-81 188 -8 | 21 164 29 559 | 2 92 754 | 16 346 23 501 | 2 06 544 |
| 1882-83 | 24 603 | 2 46 476 | 14 244 | 1 33 of t |
| 1883-84 1884-85 | 25 83 33 408 | 3 0 575 | 20 S36 | 34 584 |
| 188, 86 | 21 213 | 1 77 536 | 6 455 | 56 844 |

Deta 1 of Imports 1885 86

| Prov ace ato which mported | Quant ty | Value | Country whence mported | Quant ty | Value |
|--|-----------------------------|------------------------------------|---------------------------------------|---------------|-------------------------|
| | Cwt | R | | Cut | R |
| Bengal Bombay and S nd Madras British Bu ma | 7 94 9 87 62 2 986 | 66 99 79 095 8 7 3 23 530 | Stra ts Se tlements Othe Countries | 20 350 4 0 | 3 58 1 72 880 498 |
| TOTAL | 21 2 3 | 77 536 | TOTAL | 2 3 | 1 77 536 |
| | | | | | |

Detail of Exports 1885 86

| P ov ace f om wh ch exported | Quant ty | Value | Country to vh ch expo ted | Quant ty | Value |
|--|------------------------------|-------------------------------|---|---------------------------------|---|
| | Cwt | R | | Cwt | R |
| Bengal Bombay Mad as B tish Bu ma | 1 525 6 3 537 3 700 | 20 770 406 54 32 354 | Un ted K ngdom Un ted States Italy Cape Colony Mau us Other Count es | 3 827 427 63 469 87 | 35 030 8 435 60 6 28 080 5 0 |
| TOTAL | 20 836 | 34 884 | TOTAL | 6 485 | 56 844 |

The reader is referred for further part culars to the nformat on g ven under the spec so of calamus. In concluding the account of Canes t s necessary to br elly ment on a few of the more common art cles somet mes sold though ncorrectly under the name of cane. The most important s the man correctly under the name of cane.

Substitutes for canes 317 Whangee canes 318

returns i

Pu Pu

v a geeta eo thha

| CANES. | European Uses of Canes. | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|
| Baskets. 302 Chairs. | out the anchor" Ropes are regularly made in China by splitting the rattan and twisting the thickness. This used. The small entire and cut | | | | | | | | | | |
| 303 Mats 304 Cane-work. 305 | gether, by means of cane-etrings, the canes being arranged so as to be that | | | | | | | | | | |
| Walking Sticks 306 Umbrella handles 307 Jmbrella ribs 308 Saddlery. 309 Harness. 310 Furniture. 311 Centralaxis | The European Uses of Cares are even more varied than the Asiatu They are valued on account of their lightness, flexibility, and strength They are extensively used as walking-sticks, umbrella handles, and eve as a substitute for whalebone for umbrella and parasol ribs, each set such ribs costing only from 14 to 23d instead of 25 6d, to 33 for whalebon Cane is also extensively employed in saddlery and harness, and a wicker work of rattan is now used in the construction of the German militar helmet, which is said to make it sword proof. But the chief purpose to | | | | | | | | | | |
| 312 Window blinds 313 Dyed cane 314 | construction of fancy perty not possessed b case any desired colou however, of the fact that the Nagas and other hull tribes of Assam dy human and goats' hair a beautiful scarlet, as also tint with the same colour the outer succools layer of the rattan cane. Bands of stained | | | | | | | | | | |
| Fibre from cane 315 Cane- maitresses, 316 | · · · · · · · · · · · · · · · · · · · | | | | | | | | | | |
| | the place of the coir of India TRUBE RETURNS OF CAMES Very little can be learned regard on the internal tender and a second | | | | | | | | | | |

33 I

Indian Hemp. CANNABIS

CANNABIS, Linn.; Gen. Pl, III, 357.

Cannabis sativa, Linn ; DC. Prodr., XVI, I, 30; URTICICER.

HENF; INDIAN HENF; CHANNE, Fr., HANF, Germ.; CANAPE, II.; KONAPIA, Rus.; CANANO, Sp.; HAMP, Dan.; KANAS, Kelite.; CANNABIS, Latin and Greek.

Syn -C INDICA, Lamb.

References - DC Prod , XVI , p 1 . 30, published in 1869, Rozb , Fl

Habitat —Cannabis indica has been reduced to C. sativa—the Indian plant being viewed as but an Assatic condition of that species. This extends the region of the hemp-plant very considerably. It has been found

| | _ • |
|--------------------------------------|--|
| CANNA indica. | Indian Shot |
| Palm walking sticks. 319 | - f1 f e1 1 m 1 |
| Male bamboo 320 | palm, and from the cocoa-nut palm, and are now-a-day's largely used for umbrella handles. The "Malacca cane" is obtained from Calamus Seponum, and the ratian from C. Ratoog and one or two allied species, the former obtains its beautiful colour by being smoked. |
| 321 | CANNA, Linn , Gen Pl , III , 654 |
| J =- | Canna indica, Linn, Roxb, Fl Ind, Ed CBC, 1, Scitamine |
| | Indian Shot |
| | Vern.—Sabba jaya, Hind , Kiméra, N-W P , Sarba jaya lal sarbo |
| | • • |
| | Butsarana, 51NG |
| | References — Throatter En Ceylon Pl 220, Dals & Gibs , Bom Fl 824, L Powell, Smith, |
| DYE | Habitat —Several varieties are common all over India and Ceylon, chiefly in gardens, where they are grown as ornamental and flowering plants, they are in flower all the year |
| Seed. 322 | Dye —"The SEED is black, and round like a pea and yields a beautiful but evanescent purple dye" (Dals & Gibs, Bomb FI) |
| MEDICINE Root 323 | Medicine —The ROOT is used as a diaphoretic and diuretic in fevers and dropsy (Alkinson), and also given as a demulcent (Irvine) It is considered acrid and stimulant (Fleming) When cattle have eaten |
| Seed. 324 | |
| FOOD Boot 325 Starch 326 | |
| Allment or | |
| 327 | for the Statich Subsides § "In the West Indies arrow-root has been obtained from C. glauca, called Tous les mors' (O'Shaughnessy)" (Surgeon C J. H. Warden, Professor of Cim. C. 111. |
| DOVESTIC | use |
| 328 Seeds. | nec and their ornaments of them. In the West Indies the leaves |
| 320 Necklaces 330 | are used to thatch houses" (Prury) [See also under Reads Vol 1. 241 |
| | C 220 |

C. 330

Indian Hemp.

cannabis sativa.

CANNABIS, Linn; Gen. Pl, III, 357.

Cannabis sativa, Linn ; DC. Prodr , XVI, I, 30; URTICACEE.

HEMP; INDIAN HEMP; CHANNE, Fr.; HANF, Germ; CANAPE,
It; KONAPEI, Rus.; CANAMO, Sp; HAMP, Dan.; KANAS,
Kelike.; CANAMUS, Latin and Greek.

SYD -C INDICA, Lamb.

Vom _c . 1 + + t und thin nin . - torre of enditt est.

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BURN , Mathanish, garny gaha, humangahi, Sino.

The above veracular names are either given to the pint or to the forms of the narcotic. It has been found impossible to separate them for certain, and they have accordingly been left for the present in what must be admitted an unsatisfactory form. Much apparent confusion exists in the various probe of the property of

Arts and Manufactures; Hambury, Sc. Papers, 187; Kew, Official Guide, Mus., No. 1, p. 120, Morsis, Godacery Dist., p. 69. All Government Excess and other Reports down to 1884-35

Habitat —Cannabis indica has been reduced to C. satiya—the Indian plant being viewed as but an Assatic condution of that species. This extends the region of the hemp-plant very considerably. It has been found

| CANNAB | 15 |
|--------|----|
| | |
| sativa | |

The History of the Indian Hemp

Hemp Acclimatised and Cultivated in India. springing up spontaneously on the churs of the Subarnarekhá river and to be wild in the territory of the Mohurbhunge State on the frontier of Midaapur and also in Singhbum. It is cultivated more or less throughout India, either on account of the xakcoric derived from (a) the resin, charat; (b) the young tops and unfertilised female flowers—gánya (or ganya), (c) the older leaves and frunt-vessels—bhang, or on account of the fiber IREM? or the rips seed from which an our is prepared. Ganya is de-

doubtful of its being a native of Southern and Central Russia, but sus-

property is not developed until the fruits are mature. Jeaves at this stage, and sometimes the fruits also, afford blong. With Cananals maked a directing in so marked a degree according to the manufacture of the control of the cont

The History of the Indian Hemp.

CANNABIS sativa.

chemical processes which take place in the structure and physiological peculiarities of a plant. In most instances, a plant taken by man from one climatic condition to another, either dies quickly, or if it survives, it exists in a sickly condition. A few plants however, such as the pointo,

The plant for one or other of these purposes is now extensively cultivated throughout Persia, in India, from the feet of the sea in Bengula to the inner Himália, ast an altitude of 10,000 feet, in Chinn; in Arabia, and in Africa, from the extreme south to the north, and on the mountains as well as on the plants, in the north-eastern portions of America and on the table-land of Brail I its also to be met with in Northern Russia even as far as Archangel In Englands in out infrequently occurs as a weed, spinging up most probably from ejected birdseen.

The modes of cultivation and the nature of the soil required, depend on the purpose for which the plant is cultivated. This subject will accordingly be discussed later on

HISTORY OF HEMP.

THE NARCOTIC

Indian Literature—"The earliest synonym appears to be bhique, which occurs in the Atharav Meda—the last of the four scriptures of the Hundus It is derived from a root which means to break, and is supposed to imply the process of debarkation by which the fibres of the plant were separated from the stem. This would indicate that even at the remote period when the Veds in question was written, probably about 3,000 years ago, the use of hemp as a fibre-yielding plant was well known and the knosledge fully utilised. The Veds, however, reckons it, along with the Soma, as one of the five plants "which were liberators of sin," and this would imply that its narrotic properly was also well known. The word is used in the masculine form with a short final vowel, and not, as an later, literature, with a long one. Both the masculine and feminine.

332

CANNABIS sativa The History of the Indian Hemp

HISTORY

cotic yielding is the reverse to the popular belief the male or staminate

and

and Sanskrit writers were aware of the existence of male and female flowers centuries before the sexes of plants were realised in Europe

The Narcotic. Hımalaya

Classical Literature of Europe —The ancient SCYTHIANS seem to have been acquainted with the narcotic properties of the plant as well as with its fibre. Hronorous tells us that they existed themselves by 'mhaling to ward the state of the plant as well as with the state of the state of the plant as well as with the plant that the state of the plant that the state of the plant that the state of the plant that the plant the plant that the plant that the plant the plant that the plant t

among them since ing a secret by wh secret is supposed

(Johnston, Chemistry of Common Life, 337)

Mythology 334

Mythological History of the Narcotic—"The notices of hemp in Arabic and Persian works are much more numerous. The oldest work in which it is noticed is a treative by Hassan, who states that in the year 6,3 Å H, She k Jafer Shirazu, a monk of the order of Haider, learned from his master the history of the discovery of hemp. Haider lived in 1930 prins the state of the phase in 1930 prins the phase phase in 1930 prins the 1930 prins the phase in 1930 prins the phase in 1930 prins the 1930

in wine or spirit seems to have been the favourite formula in which Sheik Haider indulged himself (Dymock, Mat. Med., W. Ind., 604)

A curious story is told in the Hindu mythology about the origin of this plant "It is said to have been produced in the shape of nectar

excited On the last day of the Durga Pooja, after the idols are thrown into water, it is customary for the Hindus to see their friends and relatives and embrace them. After the ceremony is over it is incumbent on the owner of the house to offer his visitors a cup of bhang and sweetments for uffin (lunch) (U C Dutt's 184 Med Hind, 230)

C. 334

CANNABIS The History of the Hemp Fibre. satıva. More Recent Historic Facts regarding the Narcotic,-The use of hemp

(bliding) in India was particularly noticed by Garcia de Orta (1563), and the drug as time to

East In " It calling

in his T•

DeLacy drug in a Calc ita I. O Shaughnessu in 1848

(Fluck. & Hanb , Pharmacog , established place in the Pharmacopæia' 547-48).

HISTORY OF THE HEMP FIBRE.

The following extract may be here published as giving the most trustworthy facts which can be adduced regarding the history of the fibre "According to Herodotus (born 484 B C), the Scythians used hemp, but in his time the Greeks were scarcely acquainted with it. Hiero II, King of Syracuse, bought the hemp used for the cordage of his vessels in Gaul, and Lucilius is the earliest Roman writer who speaks of the plant (100 BC) Hebrew books do not mention hemp. It was not used in the fabrics which enveloped the mummies of ancient Egypt Even at

HISTORY.

The Fibre.

335

Canvag.

with hasish before performing certain ceremonies or perpetrating inhuman deeds The word according to some would appear to have been originally Assassin.

CANNABIS sativa.

History of the Hemp Narcotic.

It seems probable that the English form of the word was adopted at the latter date, but that the more Arabic form was known in Europe for some time previous Hemp is alluded to in the "Arabian Nights" under its more ancient Arabic name, beng.

CULTIVA-TION. 336

CULTIVATION

It has already been incidentally remarked that the cultivation of Cannabis sativa in India is naturally referable to two sections: (a) Cultivation with a view to preparing some of the forms of the narcotic, and (b) cultivation on account of the fibre. It has also been stated that the hemp plant has, to a large extent, changed its character under Indian or rather Asiatic cultivation It is very generally admitted, for example, that in the plains, while the narcotic principle is readily developed, the hemp fibre is but very imperfectly formed Let it, however, be distinctly understood that by hemp is here exclusively meant the fibre of Cannabis sativa. This remark is all the more necessary when it is

Expectations regarding Hemp Fibre.

> a superior oil-seed, and the hemp plant a valued narcotic, but neither *~

> > eleva-Cycloown in

enters into an account object of proving that it Paniáb, but he makes no

mention of the fact that the principal seats of hemp cultivation, as a commercial article, are in Eastern Bengal, the Central Provinces, and Bom-The Encyclopædia Britannica has also fallen into the same mistake. and, indeed, illustrations might be multiplied to show that undue prominence has been given to the fact that the plant is grown in Garhwal, the

* See a further page regarding Godavery District

C. 336

The Cultivation of Hemp in India.

CANNABIS sativa.

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Paniáb, and Kashmir, the more so since by most writers the true regions of Indian cultivation have been, to a large extent, overlooked. ---

CULTIVA-

his Report on the Cultivation of and Trade in Ganja in Bengal (1877), has placed in the hands of the public a valuable treatise which deals both with the cultivation of the plant and the preparation of the narcotic. Dr Forbes Royle in 1855 issued his Fibrous Plants of India. a work

personal observations, supplemented by several less important publica-

tions, and Government reports, the following abstract regarding Indian (a) CULTIVATION FOR THE NARCOTIC.

Bengal Cultivation .- The method pursued in Eastern Bengal, according to Mr. Hem Chunder Keer . he an -- " land for home

For the Narcotic. 337

o a garding disches of from any on all over the field, and it is freely manure

hemp cultivation has been prepared.

is ploughed into the soil, and the means of the cultivator will admit or the belief is that for hemp the land cannot be too often alo about

thoroug water, the rain

into no Nu ing of s

sandy I May ait need be ised (of Sept ready

sary fc on the up by en. c 11

by . fav . . . si outs. ineridges are again re-dressed and manured, the furrows ploughed, and all weeds removed. At this stage the plants begin to form their flowers, when the services of an expert, known

CANNABIS sativa.

The Cultivation of Hemp in India.

CULTIVA-

as the gánjá-doctor (poddár or parakdár) are called in

to make the male or lants. Kerr njure

This person

gánjá

Fruits injure Ganja,

iction scape detection, the result being that a certain number of the female plants are fecundated, fruits and seeds being produced. These are thrashed out as far as possible in the manufacture of the drug, the quality of which may I IL at formation from p oh me + + ac

For the Fibre.

(b) CULTIVATION FOR THE FIBRE HEMP.

338

Indian Methods .- Dr. Royle very appropriately remarks: "There is every reason for believing that the plant is of Eastern origin, while there is no sufficient reason for thinking that the climare of Europe is so peculiarly suited to the production of its fibre as to exclude those of its have resent on a no d to those s here the month native climes, especially

is grown on account of it

where it is cultivated for

latter requires exposure

sowing, while the growth of the tibre is promoted by shade and moisture, which are procured by thick sowing." It has already been pointed out that the regions suited for ganta cultivation are perfectly distinct from those where it might be possible to develope an industry in the fibre. However much it may be regretted it seems impossible to combine the two industries, and it is an accepted fact that, unless utilisable as a paper stock, the immense amount of stems annually destroyed by the ganja cultivators must continue to be so,

Godavery Hemp. 339

At the same time Mr. Morris, in his account of the Godavery District. gives some interesting facts regarding the cultivation of hemp fibre. It is planted in November and cut by the end of March. It is grown in drills and never watered. Clay soils and those beyond the reach of inunda-

R100 a putts of land The bundles are bursed in mud and left to rot for about a week when they are taken out and beaten in the water, and after all impurities are removed, the fibre is collected." The exports from the district are said to have been, in 1854-55, 4,269 cut

Unless there be some mistake, Sunn hemp having been called "Cannabia sativa," for Mr. Morris gives that scientific name as well as the vernacular name samumu for the fibre he is describing, this information is of the greatest interest, as it would show, what the writer was not aware of until recently, that hemp fibre was actually produced on the plains of India

Celtivation of Hemp in India

CANNABIS satıva

EARLY EXPERIMENTS IN HEMP CULTIVATION -In 1802 the Govern- CULTIVAment of Ind a made various experiments on an extended scale to estab. For the Fibre lish hemp fibre cultivation Luropean seed was imported, and farms and factories established but finally abandoned Recourse was had to improving the cultivation of the Ind an stock. The cultivation and manufacture was carried on at Rishra, Cassimpore, Maldah, Gorackpore, Mhow Rohilkand, and Azimgarh, under the experienced supervision of European hemp dressers The results were every where unsatisfactory and

THE POSSIBILITE OF MUKE EAR OURABLE ICE OF S . SP CO disheartening results, it cannot be definitely stated that it is impossible that hemp fibre can be produced in India The efforts alluded to were mainly

Possible

printed as it expresses pretty clearly Or Royle's view - This (hemp) Lla ac a lad a a magna

Dr Royle alludes to successful experiments of hemp cultivation in the pla ns, especially at Chittagong But in most cases as was proved with the plant reared at Saharanpur, it is admitted that the plains crop is far

CANNABIS sativa. The Cultivation of Hemp in India.

CULTIVA-

as the gánjá-doctor (paddár or parakdár) are called in. This person

Fruits injure Ganja. yielded by them is very interior and scarcely saleadie. The destruction of the $m\acute{a}if$ plants is, however, never so complete but that a few escape detection, the result being that a certain number of the female plants are fecundated, fruits and seeds being produced. These are threshed out as fear as possible in the manufacture of the drug, the quality of which may

For the Fibre.

(b) CULTIVATION FOR THE FIBRE HEMP.

Godavery Hemp. 339 which are procured by thick sowing " It has already been pointed out that the regions suited for ganja cultivation are perfectly distinct from those where it might be possible to develope an industry in the fibre. However much it may be regreated it seems impossible to combine the two industries, and it is an accepted fact that, inteles utilisable as a paper stock, the immense amount of stems annually destroyed by the gdinja cultivators must continue to be so

At the same time Mr. Morris, in his account of the Godavery District, gives some interesting facts regarding the culvivation of hem fibre 1 is planted in November and cut by the end of March. It is grown in drills and never vatered. Clay soils and those beyond the teach of inundation are those best suited "About 2,200 bundles can be produced in one puttl of land, each bundle yielding 1½ size of fibre, or a total of 3,300 vist or 412½ maunds, and is valued at one rupee a maund. The expenses of cultivation are estimated at Rs.8, and those of the preparation of fibre at Rico a puttl of land. The bundles are buried in mad and left to rot for about a week when they are taken out and beaten in the water, and after all impurities are removed, the fibre is collected." The exports from the district are said to have been, in 1854:53, 4.405 cut

Unless there be some mystake, Sunn hemp having been called "Cannabis sativa," for Mr. Morris gives that scentific name as well as the vernacular name naturni for the fibre he is describing, this information is of the greatest interex, as it would show, shat the writer was not aware of until recently, that hemp fibre was actually produced on the plants of India. Cultivation of Hemp in India.

CANNABIS satıva

EARLY EXPERIMENTS IN HEMP CULTIVATION -IN 1802 the Govern- CULTIVA-

For the Fibre.

Mhon, Robilkand, and Azimgarh, under the experienced supervision of European hemp-dressers The results were every where unsatisfactory and the experiments abandoned

er the rejected stems from but the enquiry in this

> Possible Prospects

printed, as it expresses pretty clearly Dr. Royle's view - This (hemp)

would also be softer and more pliable at the same time that it retained a great portion of its original strength, and probably in as large a quantity as is yielded by the sunn plant. Thus, an article might be produced which, judging from the Italian samples, might enter into competition with the Russ an product, and at all events afford much more valuable cordage than the second of the second

Dr Royle alludes to successful experiments of hemp cultivation in the plains especially at Chittagong But in most cases as was proved with the plant reared at Saharanpur, it is admitted that the plains crop is far

| CANNABIS sativa. | The Cultivation of Hemp in India. |
|------------------------|--|
| CULTIVA- | 1 1 King in the shorter |
| For the Fibre | 1 \ M |
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| 1 | × |
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| } | |
| | |
| } | 1 |
| 1 | separate flowers and borne on separate plants The male plants (called |
| 1 | • |
| | authors give accounts of the methods pursued in Europe in hemp culti- |
| ţ | " |
| 1 | ****** |
| ł | í |
| l | |
| Italian Hemp 340 | Table 1 abrent to bon all and 3 |
| 340 | |
| | • |
| Male Fibre 341 | |
| | sowing, each is uprooted singly, care being taken not to injure the stem. "The fibreis separated either by retting or by breaking and scutching" (Spors' Encycl) |
| FCONOMIC PROPERTIES | Properties and Uses of Cannabis sativa From the STPMS, LYAVES OF PLOWERS, and even the PRUITS a RESIN |
| PROPERTIES | DUS FERRACE, of a powerful parcous character, may be accounted. The |

From the STRYS, prives of PLOWERS, and even the PRUITS a RPSIN OUS FXTRICT, of a powerful nircotic character, may be prepared. The INNER BRIK affords, the valuable FIBER HEMP. The SEEDS are occa-C. 341

The Narcotic-Indian Hemp

CANNABIS sativa.

sionally eaten, they are much valued for feeding birds. An oil is expressed from them which is of some importance, but can scarcely be called commercial.

RESIN OR NARCOTIC.

There are primarily three forms of this substance, but under each there exist also local modifications special preparations from these, and adul-

BENGAL MANUPACTURE

(11) GANI — This is known in the trade is consisting mainly of two forms. Flat Ganja and Round Ganja. Speaking of the manufacture of ganja in Bengal Mr. Hem Chunder Kerr sajs. — In February and March, when ganja attains its maturity the cultivator proceeds to make arrangements for reaping the crop and preparing the drug. His first step is to present himself to the supervisor, show him the license under

GANJA 342

mencing operations

Flat Ganta - The stems are cut with a sickle about 6 inches above

Fist 343

size These are arranged on a mat in a circular form, with their points directed to vards the centre and overlapping each other. The circle thus

firmly among the flowers in the desired form Fresh twigs are then

mats are spread and the flowering twigs besten two and two together so as to shake off the leaves or any fruits that may still remain and are re-arranged in a new circle, so that what was on the top before now forms the bottom

| 114 | 2.000,000,000 |
|-------------------------|--|
| CANNABIS sativa. | The Natconc—Indian Hemp. |
| GANJA. | layer of the new circle The treading is repeated stage by stage until the stack is again covered by the mais, and mentake up their inexplicable seat on the top Alter this each twig is trodden upon separately, being placed for |
| , | `. |
| } | |
| Round | |
| 314 | • |
| } | thin sausage shape near the apex of the twig. This rolling is repeated |
| | the state of the s |
| Chur or rora | |
| | · |
| | : |
| | gánja Chr - , p 761) says of the |
| | cant of th ced in Kumaan and Garhwál is far as I am awar cyported from the lower dis. |
| | tricts. Twe include the blackar and painter in imported current principles and is of quality inferior to the Bengal gangs. It is purchased at from R5 to 6 a mund in Indian in the rough state," and "pays a duty of about 4 annas per maund on exportation to British territor," It is sold retail at from R3 to 4 n seer. The bluefar variety is imported from Lower Bengal, and is sold at R10 to 12 a seer. |
| SYDITATIONS | BONEAY AND THE CENTRAL PROVINCES. |
| OF GANJA | \ . · . · |
| Expressed Juice | |
| 346 Decoction 347 | bengal is concerned, it may confidently be stated that adulteration can |
| | C. 347 |

CANNABIS The Narcotic-Indian Hemn. satıva. alone take place when the intoricant reaches the hands of the dealer. In the golas it is quite pure. The mention of chur, and of the extracts referred to by Dr. Irving, 1 - 1 - - - - - which CHARAS. int (see 348 accordl atracta ground. The crop is reaped about November and the powder stored in small 24h bags. About May these are sold to the traders, who cut the bags open and spread out the now partially agglutinated powder on cloths under the sun. It softens and deepens in colour and is hard pressed into bags or bales 1\(\frac{1}{2}\) maunds in weight (a half pony-load ready for exportation). The quality is judged of by the amount of oil seen The quality is judged of by the amount of oil seen through the until it is of t and exposing surface of th . broken, is se pure steel. exposed, it i linseed oil and a powder of the hemp leaves From the above description it would appear as if Yarkand charas was MONEA. 340

| | * * |
|---------------------|---|
| CANNABIS sativa. | The Narcotic—Indian Hemp. |
| | given internally in cases of wounds and ulcers along with ght, dose one masha". It is noteworthy, in connection with Dr Gimiette's discovery regarding human fat used in the niamfacture of Nepal mome, that amongst the ignorant classes of Northern India a supersition prevails that they may be captured and carried off to some distant land to be made into momea. This fact has been alluded to by various officers in |
| | several localities where bituminous products occur, as they are commonly sold as drugs in the bazars of that country. According to Captain Hutton (Cai Jour, Nat Hist, Val VI, 601), a mineral pitch called |
| Momyal 352 | · . |
| 353 | |
| 354 |] |

exude from a crack on the face of a high rock There are thus numerous allusions to a substance or substances known

in the bagars of India under the name momea, but in none of the published accounts of this drug is there the slightest reference to its being a product of Indian hemp, although, in the early literature of that narcotic, it is repeatedly stated that a pure waxy form of charas obtained from Nepál is sold under the name of momta Charas is collected in Sind and in Central India by causing men to

run through the hemp fields They are said to be generally clad in leathern aprons to which the resin adheres, but in some cases are reported to have their bodies first oiled and then to run naked through the fields C. 356

aras fron

CANNABIS

satıva.

Smoking

mixtures, 361 Hashish, 362 Majun 363

| ĭ | 1 | 1 - 1 | | a ~ a | 4 ~ ~ + - ~ | CHARAS. |
|----------------|---|----------------|----------------|-------------------------------|--------------|----------------------------|
| | | • | | • | • | Trans Hima- laya 357 |
| | •• | | | | | |
| | | | | | | |
| | • • | | | | | Garda or |
| | | | | | | Panjab Charas |
| | , | "n 1 - 1 | | | | 358 |
| | | | • | | | Bhangra, and Khaki |
| | | | | | | 359 |
| stirrit and | ng about the bhang filling the room, set | and making | the surface of | oon a hne di f the cloth s | nread over | 1 |
| the h | eaps When all ti | he dust has | been shaken | out and se | ttled on the | ì |
| al h | the cloth of old | 1 00 0 + 004 | trajtan oq | et falle da | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| , | | | | A | | BHANG. |
| plant | ard) Bháng or Si t is the chief sourc | e of this forr | n of the drug | . which con | sists of the | 360 |
| matu | ire leaves and in so | me parts of I | ndia of the fr | unts also 1 | The resin is | - |
| | | | | | • | |
| | | | | | | |
| | | _ | | | | |
| | 2 01 66 ~ namel | 0 *^ ^ ~ | | | | |
| ٠. | | | | | | |
| artic | le 18 taken into con | sideration | | | | i |
| | | | ONS FROM H | EM P | | } |

and it would be impossible to prohibit him gathering, from such a plant, the daily quantity used by himself and family. This is precisely the state

FORMS OF LINDIAN HEMP—As already explained there are three forms of this poisonous drug (a) ganya, the agglutinated female flowering tops and resinous evudation on these, (b) charays, a resinous substance found on the leaves, young twigs, and bark, and (c) bhang or sidalit, the mature leaves,

| 110 | Distinuity by the District | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| CANNABIS sativa. | The Hemp Fibre of India. | | | | | | | | |
| | of affairs which prevails over a great part of India, and, indeed, on the | | | | | | | | |
| Bedding for Cattle. | | | | | | | | | |
| | plant, and the consumption can therefore be regulated by law. The Excise Act provides that licensed persons may cultivate the plant, prepare the narcotics, and retail these to the consumer. The right to vend is sold by public auction, a person purchasing thereby the sole right, for one ear, to all or so many of the shops in a district. Any person, other than a licensed dealer, having in his possession more than a very small quantity at one time is lable to prosecution and fine. This system of farming the wholesale and retail shops exists all over India,—Madras | | | | | | | | |
| Excise Arrange- ments, | COLUS. | | | | | | | | |
| | THE FIBRE-HEMP. | | | | | | | | |
| FIBRE 364 | The reader is referred to the account given of the cultivation of the hemp plant in a preceding page. It will there be found that a con- | | | | | | | | |
| | | | | | | | | | |
| When Mature, | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Lignification. | nd modes of culture, the plant in India, | | | | | | | | |
| | rittle character com- n due to the fact of e fibre at an earlier hus, for example, it | | | | | | | | |
| | plains of India, at Saharanpur, grew vigorously, attained a height of 12 feet, and gave every promise of proving successful. When reaped, Dr. Falconer, however, reported that "the homp-fibre did not retain the strength or | | | | | | | | |
| | | | | | | | | | |
| Experiments to be per- formed in India. | | | | | | | | | |
| | | | | | | | | | |
| | microscopically and chemically examined once a fortnight, right through | | | | | | | | |
| | C. 364 | | | | | | | | |

The Hemp Fibre of India-

CANNARIS satıva.

It would also be

nn as ia on Up

their subsequent growth, or until in each locality the period when lignification was reached by the plants had been determined

FIBRE.

abolition of 4 - 1

-ither failed to discover such regions or were imperfectly conducted, for, with the exception of certain limited tracts of the Himálayas, no part of the plains of India can be said to have been discovered in which there is the least

to final can be said to have been discovered in which there is the reason hope of hemp or flax cultivation becoming of much importance. (See remarks as to hemp in Godavery District No. 330).

In portions of the North-West Himilaya the hemp plant has been cultivated for its fibre for a very long time. Mr. Atkinson gives a brief but practical account of this industry in his Himálayan Districts

> Separation of Fibre.

lessens the value of the fibre very much, since it increases the labour in cleaning it, each hank requiring to be opened out by the hand.

mant must minte true

| CANNABIS sativa. | | The Hemp | Fibre of India. | |
|---------------------|---------|----------|-----------------|----|
| FIBRE. | . ' | ^ | | /6 |
| • | | | | |

. .

ropes and twine Winere this competition proved comparatively reported, substitutes were brought forward, and at the present day the most extensubstitutes were orought forward, and at the present day the most extensively used fibres in the rope trade may be said to be hemp, core the fibre from the outer layer of the cocoanuly, Manilla hemp, cotton, and sunn-hemp Italy produces the finest hemp, France is perhaps next in importance, then Great Britain, Serva, Germany, and of Asiatic countries the contract of the contract tries China is reputed to produce good hemp

INDIAN FOREIGN TRADE IN "HEMP"

of 'np

| | | | Foreign Hemp imported | Foreign Hemp exported | Indian Hemp exported. |
|-----|---|--|--|---|---|
| - 1 | | | R | R | R |
| | Raw Hemp | 1891-82 1892-83 1893-84 1894-85 1895-86 1891-82 1892-83 1893-84 1834-85 1895-86 | 1,10,875 1,82,993 1,76,765 2,14,118 1,96,052 10,179 27,090 32,570 41,356 42,810 | 4,182 8,857 4,549 1,50 323 | 5 59,112 4 30,325 6,85,316 5,82 679 9,88,825 1,409 3,176 6,510 3 129 3,205 |
| • | Cordage and rope excluding jute, but otherwise the bulk probably Manilla Hemp and true Hemp | 1851-82 1852-83 1853-84 1854-85 1855-86 | 3 22,485 4,31,693 3 90,584 3,52,413 3,24 519 | 24 886 15,5°6 11,198 13,076 7,437 | 3,25,178 2,84,106 4 92,068 3,53 389 3,28,320 |

Manufac tures. 368 Cordage 360

Raw Hem 367

> Foreign Trade in Manufactured and Unmanufactured Hemp, excluding Cordage

| | | | | Ye | ar, | | | | | Imports | ts Exports and re-exports |
|---------|---|---|---|----|-----|---|---|---|-----|----------|---------------------------|
| | _ | | | | | | | | | Value | Value |
| | | | | | | | | | | R | R |
| 1531-52 | • | • | • | • | • | • | • | • | - 1 | 1,21,054 | 5,64 703 |
| 1832-83 | • | • | • | | | | | • | - 1 | 2,10 093 | 4,42,358 |
| 1833-84 | • | • | • | | | • | • | | -1 | 2,09 335 | 6,96,374 |
| 1334-55 | • | • | • | | • | | • | • | -1 | 2,55,474 | 5,85,958 |
| 885-86 | • | | • | | | | | | • | 2,39,862 | 9,92,353 |

| The Indian Hemp. | | | | | | | | | | | |
|------------------------------------|--------|--------|------|------|--|---|----------|--|--|--|--|
| Detail of Imports, 1885 86 | | | | | | | | | | | |
| Province inte | o wh | ch 107 | port | rd | Country whence imported Value. | 370 | | | | | |
| | | | | 1 | R | R | | | | | |
| Bengal Bombay Madras Sind | : | : | : | | 1,33 235 1,01,600 1,183 2,844 | United Kingdom | | | | | |
| | | Тот | AL | | 2,38,862 | TOTAL 2,38,862 | } | | | | |
| | _ | | | Dı | tul of Exp | orts, 1885-86 | Exports. | | | | |
| Provin | ce fro | | hich | | Value | Country to which exported Value | 3/2 | | | | |
| Bengal Bombay | | | : | | R 3 11,551 6,31,444 | R Un ted Kingdom 6,78,607 Belgum 2,56,566 Perssa 2,56,566 | | | | | |
| Madras | | • | • | • | 49,358 | Persia 11,438 Arabia 15,698 Other Countries 30,044 | | | | | |
| | _ | To | TAL. | · | 9 92,353 | TOTAL . 9,92,353 | | | | | |
| It h is expre and we | essed | In ' | oune | l im | possible to loth in piec | give the quantities, since the raw fibries, and rope in balls of various length | 5 | | | | |

OIL.

gravity of 0 9252 at 15°C, it thickens at - 15°C, and solidifies at - 25° to - 277C. It dissolves in boiling hot water and in 30 parts of cold alcohol

> MEDICINE. for an often the water

MEDICINE. 373

| sativa. | · | |
|---|---|--|
| MEDICINE | to the month decrees and of late courses and to a feel and of | |
| | | |
| | . • | |
| 1 | • | |
| | | |
| hur or Round | , | to purchase en allowing á dealer or |
| Ganja best suited for Pharmacy Flat Ganja and Charas should be | | er a permit raised as to stered as of From what |
| avolded | Γ . In the second of the second of Γ , which is the second of Γ . | to use for |
| | 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - | ٠. |
| 1 | d ' | : |
| | | |
| | ducing uterine contractions. | : |
| | It is admitted by most Indian physicians to be of special iteratment of tetanus and cholera and has not the injurious which but too frequently ever, very similar to the habitual optime acter man. | after effects result from at of onum. |
| | Sir William O'Shaughnessy was the first European war prominent attention to the peculiar properties and actions of parcoles. He experimented with these in Calcutts and on parcoles. | ter to draw |
| | results. The reader is referred to his Bengal Dispensator. "Memor on the preparations of Indian Hemp" in the Tra Medical and Physical Society of Calcutta for 1839, and to it the Journal of the Antac Society, Vol. VIII, of the same ye- after the appearance of these most exhaustive accounts, the dr be experimented with in Europe. | y and to a nsactions of o propers in |
| | C. 375 | |

The Indian Hemp as a Drug.

CANNABIS sativa.

Ainslie, in his Materia Indica, and Vol., gives an interesting account of MEDICINE.

ferent ingredients, of which datura and opium are frequent. In some parts of India a beer is brewed with bháng, and this, together with bháng itself, májúm and other preparations, are often employed in Native pharmace.

and convenience, Indian Hemp is the next anodyne hypnotic and antispasmodic to opium and its derivatives, and often equal to it." Dr.

Makhson, "the leaves make a good souff for deterging the brain; their juce applied to the heart allays these and go

Mat. Med. West India).

The medicinal properties of hemp, in various forms, are the subject of some interesting notes by Mirza Abdul Russac. "It produces a ravenous

| CANNABIS sativa. | The Indian Hemp as a Drug. |
|---------------------|--|
| MEDICINE | tice has greatly decreased of late years owing to a feeling of insecurity as to the quality of the article. It is commonly recorded that no reliance can |

Chur or Round Ganja best suited for Pharmacy Fiat Ganja and Charas should be avoided

in cholera, menorrhagia and uterine homorrhage, theumatism, hay fever, asthma, cardiac functional derangement, and skin diseases attended with much pain, and prurtus In lingering and protracted labours depending upon atony of the uterus, it has been employed with the view of inducing uterine contractions.

It is admitted by most Indian physicians to be of special ment in the treatment of tetanus and cholera and has not the injurious after effects frequently result from nilar to that of opium, meater may take large

C 275

The Indian Hemp as a Drug.

CANNABIS satıva.

Ainshe, in his Materia Indica, 2nd Vol , gives an interesting account of

MEDICINE.

itself, majum and other preparations, are often employed in Native phar-

-Lin remarks, derivor some years,"

from Calcutta e pain, obtain

sleep, and put an end to spasm in circumstances under which morphia either did not suit or was objected to by the patient, and after wide experience with it I am quite satisfied that it is an exceller t substitute for it, if given in sufficient doses. The difficulty is, to be always sure of the quality of uniformity in the extract, or rather of the ganja from which the extract is obtained I

and convenience, Indian Hemp is the next anodyne hypnotic and antispasmod c to opium and its derivatives, and often equal to it, Dr.

applied externally ** * nulation, a poultic ervsipelas, neuralg istered internally" Mat Med West India)

The medicinal properties of hemp, in various forms, are the subject of some interesting notes by Mirza Abd 10 and 11 and

appetite and constipation, acrests

smokers of gánna generally die of diseases of the lungs, dropsy, and anasarca, so do the eaters of manna and smokers of saddin, but at a later period. The inexperienced, on first taking it, are often senseless for a day some go mad, others have been known to die,

Dr U C Dutt says that, according to the Sanskrit writers, "the leaves of Cannabis sativa are said to be purified by being boiled in milk

| 4 | , , , , , , , , , , , , , , , , , , , |
|------------------------------------|--|
| CANNABIS sativa. | The Indian Hemp as a Dreg |
| MEDICINE. | tr m a a .t a |
| Dysentery. | |
| Affections of the eye Piles. | |
| насна 377 | Charas of the trade, but it is terribly adulterated The plant is called the one extracted from the remedy, applied by rubbing |
| Oli used in Rheumatism | useful in atonic dyspepsia and di |
| | |
| Acute Mania | in dysuria, and in relieving pain in dysmenorthea" (Dr. E. G. Russell. Superintendent, Asylums, at Presidency General Hospital, Calcutta). "Commonly used as a narcotic, a few grains of the leaves called suddingable in with cardamom and other spices to allay pain, taken as a driph |
| | mixed with other drugs and spices, forms an useful compound in diarrhead and indigestion of children" (Assistant Surgeon Shib Chimder Bhatta-charjs, Chanda, Central Provinces) "The leaves, which are known as |
| Hysteria. | |
| Orchitis | |
| Asthma Chronic Colic | , |
| | |

The Indian Hemp as a Drug

CANNABIS sativa.

(Dr G Price Civil Surgeon Shal ibad) It is also used in the form of fincture for c'

the form of ele

MEDICINE Ague Fits Impotence

r at at t Deat

from a med cal point of view, are the Resin and Volatile Oil

"The former was first obtained in a state of comparative purity by T and H Smith in 1846. It is a brown amorphous solid, burning with a bright white flame and leaving no ash. It has a very potent action

CHEMICAL COMPOSI-TION

small crystals. With due precastions it may be separated into two bod es the one of which named by Personne Companies of I gu dind colourless, with the formula C₁H₂, the other when the colourless, with the formula C₁H₂, the other when the colourless, with the formula C₁H₂. The colour plays (rystals to which Personne assigns formula C₁H₂. He asserts that Cimiabene has

Cannabene 378

from the oil which he obtained from the fresh herb, just after flowering, to the extent of 0.3 per cent

"It remains to be proved whether an alkaloid is present in hemp, as suggested by Preobraschensky
The other constituents of hemp are those commonly occurring in other

plants The leaves yield nearly 20 per cent of ash.

As to the resin of Ind an hemp Bolas and Francis, in treating with

from purified resin of charas, but without success" (Fluck and Hanb, Pharmacog page 549)

Dr Dymock (a his and Ed of the Vateria Medica of Western India) goes into considerable deta l on the chemistry of this drug Preobras chensky d scovered in Chana haschisch, a volatile alkaloid which he believed to be ident cal with nicotine Dragendroff and Marqu ss

published his conviction that hemp contained several alkaloids the principal one being a substance he named Telano-cannabine. More recently to all these published results of the chemical investigation of the narcotic resin

CANOES.

126

The Indian Hemp Canoes.

oil contained phenol, ammonia, and several other of the usual products

of destructive distillation, "The nicotine like principle contained in this oil appeared to be an alkalord It formed salts which evolved a strong micotine-like odour when acted on by alkalies But physiologically it was found to be inert, and therefore was evidently not identical with nicotine" (Ind. Med.

FOOD.

FOOD. 370

Food -Messrs Duthie and Fuller, writing about the Himálayan tracts within the North-Western Provinces, say that the seed is not uncommonly roasted and eaten by the hill-men, and that after the oil is expressed the oil-cake is given to their cattle Dr Stewart writes that on the Sutley the seeds are roasted and eaten in small quantities with wheat

DOMESTIC AND INDUSTRIAL USES.

DOMESTIC. 380

381

Cannable Composition - "This material for architectural decoration is described by Mr B Albans to have a basis of hemp amalgamated with heets of large pness of detail

than half the elastic to be adapted to wall surfaces, bearing blows of the hammer and resisting all

or variousn, the material is so hard as to allow you to be puthished after gilding the ornaments made of it" (Ure. I . 611).

CANOES

See Boats, Vol I. B 518

Gas , Dec 1884)

TIMBERS USED FOR CANOES, DUG-OUTS, TROUGHS. WATER PIPES, DRINKING CUPS, &c.

I Acer cæsium, Will (drinking cups made in Tibet)
2 A oblongum, Wall (drinking cups)

3 A pictum, Thunb (drinking cups made of knotty excrescences). 4

cups).

7 8 Artocarpus Chaplasha, Royb (much used for canoes).

to A. nobilis, Thre (Ceylon canoes)

21. Bohmetta rogalosa, Wedds (Lepchas make cups, bowls, and tobacco-boxes)

C. 381

5.

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CANSCORA
             Woods used for Cances, Dug-onts, &c.
                                                                     decussata.
                                          , n ...
12
I4
15
ıŏ
17
ıś
19
20
21
22
                                                                boats
23
      and canoes)
    Duabanga sonneratioides, Buch, (canoes, cattle-troughs cut out of
      green wood)
    Dysoxylem Hamiltoni, Hiern (canoes)
25
26 D procesum Hiern (Assam canoes)
    Givotia rottleriformis, Griff (catamarans).
28 Gmelina arborea, Roxb (clogs, canoes, &c ).
29 Gyrocarpus Jacquini, Roxb. (preferred above all other woods for
       catamarans)
    Hopea odoratá Roxb (Burma canoes)
30
    Jumperus excelsa, M Bieb (drinking cups).
31.
    Lagerstrumua Flos-Regina, Rets (boats and canoes).
32
33
34
35
36
37
38
39
        awantes flug ! farmont
     ••
 40
 41.
 42
 43
     Populus ciliata, Wall (water troughs)
     Sarcosperma arborea, Hook (Sikkim canoes).
    Schima Wallichi, Choisy (Assam canoes)
     Shorea obtusa, Wall (canoes).
     8 robusta, Garin (Hills of Northern Bengal, canoes)
```

CANSCORA, Lam , Gen Pl., II, 811.

Canscora decussata, R. & Seb, Fl Br. Ind., IV., 104; Bot Mag., 1 3066, Gentianaces.

Syn Planera decusarta, Kazā, Pl. Ind., Ed. C. B. C., 138
Vetn—Sankāduli, Hins. Dankuri, Beng., Shin khapishopi, Cutch,
Sankhapushi dandopala, Sans
References—Thematies In Ceylon Pl., 201, Voqt, Hort. Sub. Cal., 310,
U. C. Dutt, Mat. Med. Hind., 201, 295, 316, Dymock, Mat. Med., VI
Ind., 451, Jabo und Ed., 450.

382

128

CANTHIUM didymum.

Cantharides : Canthum.

num.

Habitat -Common throughout India from the Himálaya to Burma.

MEDICINE

ascending to 4,000 feet, is abundant in the plains of Bengal and not un-

and atta, ade be

Med Hind, 201).
Special Opinions - § "This deserves a trial" (Surgeon-Major C J.
McKenna). "Laxative, tonic, expectorant" (Dr. W Barren, Blug, Cutch).

384

Canscora diffusa, Br, Fi Br Ind, IV, 103: Wight, Ic, 1 1327 (not [of Clarke)

Syn-Pladera virgata, Roxb, Fi Ind, Ed C B C, 134

Vera -Kvouk ban. Burm

References —Themsales, En Ceylon Pl, 205, Dals and Gibs, Bomb Fl, 158, Voigt, Hort Sub Cal, 520
Habitat —Common throughout India, ascending to 4,000 feet, from

MEDICINE. 385 286

Medicine.—Used as a substitute for C. decussata
C. sessiliflora. Roem and Sch. Fl Br Ind. IV., 10.1

387

CANTHARIS, Latreille

Cantharis vesicatoria, Latreille, Coleoptera,

Kumaon and Bhutan to Cevion and Tenasserim

CANTHARIDES, BLISTERING BEETLE, SPANISH FLIES, Eng., MOUCHES DESPAGNE, Fr., SPANISCHE FLIEGEN, Germ., CANTERELLE, II., HISCHPANSKIE MUCHI, Rus., CAN-THARIDES, Sp.

Elistering Insect 388

References — Pharm Ind, 274; U.S. Dispens, 15th Ed., 342, Spons, Encyclop, 176, Balfour, Cyclop, Ure 2 Dis. of Arts and Manufactures Habitat.—A dried insect imported into India and sold by chemists For indigenous insects used as substitutes, see Mylabris Octoru. Fabr.

389

CANTHIUM, Lam , Fl Br Ind , III , 131. The Genera Plantarum reduces the above genus to PIECTRONIA, Linn ;

but Canthum has been retained in the Flore of British India, which puts Plectronia (in part) under Canthum

Canthuum didymum, Roxb., Fl. Br Ind., III., 122; Rubiacre.

390

Canthium didymum, Roxb., Fl. Br Ind, III, 132; Rubiace.e.

Vern—Garbha gojha, Santat, Yerkoli, Tam, Yellal, porawa mara,
Gol koranda, Sing. Kan

References - Roxb, Fl. Ind., Ed. C. B. C., 180; Kurn, Fl. Burm., II, 359, Thwaites, En. Ceyl. Pl., 152, Bom. Gas., XV., 65

Habitat —A shrub or small tree found in the Sikkim Himálaya at an althude of 1,500 feet and distributed east to the Khasia and Jyntea mountains. It also is met with in Chutta Nagpur and in the Western Peninsula from the Concan southwards to the Malayan Peninsula and Ceylon.

C. 390

| Canthium · Canvas | CANVAS. |
|---|--------------------------------------|
| Medicine—Bark used by the Santals in fever (Re- A Campell) Structure of the Wood—Hard heavy, and close-grained, sellowish, with central masses of black (Pomb Gaz). This is very much like the description of the wood, as given by Brandis and by Lisboa for C. imbellatim. | MEDICINE. 301 TIMBER. 302 |
| Canthum parviflorum, Lamk, Fl Br Inl., III, 136 Syn — Webers tetrander, Billi, Annies Kara in Rhe de, Hort Val. 1, 1, 3 Vern — Airni, Bohn, Anrachedd, Tam, Tyfron lard, Mal., Baluss, chette, balis, Tet. (Airstut), Airn, Sing Reference C. L. Christut, John Sing | 393 |
| HabitatA shrubby plant met with at alutudes of 4,000 feet, in the | |
| •• • | MEDICINE. |
| C. umbellatum, Wight, Ic, 1 1034; Fl Br Ind, III, 132. Syn —Plectrona didna, Benth & Hook, Brandis, For R. Vem —Artil, Room, Netham, nalla, balis, Tam & Tel; Abalu, Kan, Tolan, David. Reference —Brandis, For B. 176. Bridd, Flar Sylv, 121; Dale & Guis, Benth & Hook); Littley, UP, 18 mb, 47. Habitat —An elegreen tree met with in the Western Pennisula (on the Ghists at altitudes of 4,000 to 8,000 feet) and distributed south to Tensserim and Ava. Structure of the Wand.—Hard along.man 3. | FOOD 305 TIMBER. 396 397 |
| white or chocolate- centre (Brands) | 398 |
| CANVAS. SAILCLOTH, Fng, KANEVAS and SEGELTUCH, Germ., CANEVAS and Tolle-A-voile, Fr, Zehldock, Dat; Lona, H, Port, Sp, CANEVAZZA, H, Port, PARUSSINA, PARUSSVOZ POLOTNO, Rus, Kittak, Tam., 72: | 399 |

lated is employed by at tists for painting on

383

28

Cantharides: Canthinm.

Habitat -Common throughout India from the Himálaya to Burma, ascending to 4,000 feet, is abundant in the plains of Bengal and not uncommon in Ceylon MEDICINE B# 4 --

and tta. ade be 'Iat.

f of Clarke)

Med Hind 201)

Special Opinions - & The deserves a trial" (Surgeon Major C F. McKenna). "Laxative tonic, expectorant" (Dr. W Borren, Bhu, Cutch). Canscora diffusa, Br , Fl Br Ind , IV , 103, Wight, Ic , 1 1327 (not

> Syn -PLADERA VIRGATA, Roxb , Fl Ind , Ed C B C , 134 Vern - Ayouk pan, Burm

References -Thuastes, En Ceylon Pl . 201. Dala and Gibs , Bomb Fl , 158 , Voigt Hort Sub Cal , 520 Habitat -Common throughout India, ascending to 4,000 feet, from

Kumáon and Bhutan to Ceylon and Tenasserim Medicine - Used as a substitute for C decussata

C. sessiliflora, Roem and Sch., Fl Br Ind. IV., 104

CANTHARIS. Latreille

Cantharis vesicatoria, Latreille, Coleoptera

CANTHARIDES BLISTERING BEETLE SPANISH FLIES, Eng. Mouches Despagne Fr , Spanische Fliegen, Germ , CANTERELLE, It , HISCHPANSKIE MUCHI, Rus , CAN-THARIDES, St

References — Pharm Ind , 274 US Dispens , 15th Ed , 342 , Spons , Encyclop 796 Balfour, Cyclop , Ure's Dic of Arts and Manufactures Habitat -A dried insect imported into India and sold by chemists For indigenous insects used as substitutes see Mylabris cichoru, Fabr.

CANTHIUM, Lam , Fl Br Ind , III , 131.

The Genera Plantarum reduces the above genus to PLECTRONIA Linn

but CANTHIUM has been retained in the Flora of British India, which puts PLECTRONIA (in part) under CANTHIUM Canthium didymum, Roxb ; Fl. Br Ind , III , 132 , Rubiace E

Vern —Garbha gojha, Santal, Yerkoli Tam, Yellal, porawa mard, Gal karanda, Sing, Kan

References -Roxb, Fl Ind, Ed CBC, 180, Kurs Fl Burm, II, 359 Thwastes, En Ceyl Pl, 152, Bom Gaz, XV, 65

Habitat -A shrub or small tree found in the Sikkim Himálaya at an altitude of 1 500 feet and distributed east to the Khasia and Jyntea mountains It also is met with in Chutia Nagpur and in the Western Peninsula from the Concan southwards to the Malayan Peninsula and Ceylon

C. 390

384

MEDICINE 387

Blisterlng Insect. 388

389

300

| Canthium: Canvas. | CANVAS. | |
|---|--------------------------------------|--|
| Medicine — Birk used by the Santals in fever (Rev. A. Campell). Structure of the Wood — Hard heray, and close-grained, sellowesh, wit central musses of black (I amb Gar). This is very much like the description of the wood, as given by Brandis and by Lisboa for C mibellation. | | |
| Canthium parviflorum, Lamk, FI Br Ind., III, 136 Syn — Neper Teirandra, Illild, Kniere Kara in Rhe, de, Hort Ud.; 1 37 Vem Arm, Bonn, Kerarthold, Tan, Tyeron kard, Mat, Baluse, chette, balist, Tet. (Ansaur), Lara, Sina References — Rosh, FI Ind. El C. B. C. 170, Gamble, Van Timb, 230, Annie Val Well II 33 Dymock, Idal Illed, II Ind., 1713, and 2nd. Ed., 600, Cale Cept II 1, 1814, Dymock, Idal Illed, II Ind., 1713, and 2nd. Ed., 600, Cale Cept II 1, 1814, Dymock, Idal Illed, III Gal, 1713, and 2nd. Hablat.— A Shrubby plant met with at allutudes of 4,000 feet, in the | 393 | |
| | MEDICINE. 394 | |
| C. umbellatum, Wight, It., 1 1034, El Br Ind., III., 132 Syn — Piectron & Didnik, Brank & Hook, Brandis, For Fl Vern — Arrel, Busin , Nickame, malla, balas, Tam & Tell , Abalu, N. Falas Units References — Grandis For Fl., 276, Bodd , Flow Sylv, 221 flate & Gits, Bomb Fl., 113, Gomble, Man Thom. 280 (under Plectonia didyma, Brank & Hook), Lisbon, U. Pl., Bomb, 87 Habstar.— An evergreen tree met with in the Western Peninsula (on the Ghats at altitudes of 4,000 to 8,000 feet) and distributed south to Ternsserin and Ava Structure of the Wood — Hard, clove-grained, and heavy, yellowish | FOOD 395 TIMBER. 396 397 | |
| Tu numerous Gamule mixes no mention of the irregular masses of black wood (Compare with C didymum) Weight 57lb a cubic foot. Timber is used for agricultural purposes | | |
| CANVAS, | 399 | |

SAILCIOTH Fing., KANEVAS and SEGELTUCH, Germ., CAMENAS and TOLKE A VOLTE, Fr., SPINDOCK, Dut.; LOVA, JI., Port., Sp., CAREVAZA JI., Fort.; PARUSSINA, PARUSSINO, POLOTINO, Kut., KITTAN, Tam., Tel.

C. 399

130

CADDADIS Canutchone The Caner herry anhulla Sails are usually made with the salvages and seams of the canvas running down parallel to the edges, though, when so constructed they are very ant to give way during storms. This inconvenience may be obviated in a great measure by running the serms diagonally to the edges 400 coarser description of hard brown canvas is also produced in Bengal In he Madrae Pen done " "ent cotton canvas is manufactured by ngether in the loom (Ralfaur, I 573) term 'canvas' appears to have been e, it has been found possible to meet certa n purposes of canvas by the manufacture of a fabric of jute or other pure or mixed fibres, this madern commercial textile is also des gnated as canvas (See Inte and Cannabis sativa) CACITCHOUC. 401 Caoutchouc is in England generally restricted to mean the pure hydrocarbon isolated from the other materials with which it forms the impure rubber of commerce See India rubber. Capillare. See Adiantum Capillus-Veneris. Linn Figures. Vol I 402 CAPPARIS, Linn . Gen Pl . I . 108 Capparis aphylla, Roth ; Fl Br Ind , I , 174 ; CAPPARIDEE Veto -harel, karer kurrel lete karn HIND Aars, BEHAR BOMB , and PB References

Habitat -A dense, branching shrub of the Panjab, of the North-

MEDICINE 403

neating and aperient,
antidote to poison,
says that the plant

Special Op mons -- § The fruit when eaten cruses obstinute constination It is used largely in the Harriana and Karnal districts as an

CAPPARIS

horrida

| -, - | |
|--|---|
| Food 1 404 1 405 1 405 1 405 1 405 1 407 1 | astringent" (Surgers Mare C. II. College. Meast). "The farks a described as biter and instance, and is said to be useful in inflammary swellings" (U.C. Dath, Stramfers). 10. C. Dath, Stramfers). 11. Stramfers and the proper of the stramfers are "presh as a policy land that the fruit is very largely constant of the proper of the stramfers and stramfers and stramfers are the stramfers and stramfers and stramfers are the stramfers and stramfers are the stramfers and stramfers are the stramfers |
| j | Capparis grandis, Linn f; Fl Br, Ind, 1, 176 Syn.—C Disperra, Rook, Fl Ind, Fd C B C 215 Vern.—Puckoonda, ragola, Dons j, hauniti, Nik i lellat tooresti, maram TAN i Gul: regulti, ragola pullem chillu regulti, Tri i maram TAN i Gul: regulti, ragola gullem chillu regulti, Tri i maram TAN i Gul: regulti, ragola gullem chillu regulti, Tri i Gad Gamble, Man Timi filia G Gamble, Man Timi filia |
| n | Habitat.—A small tree of the Chanda district and of the easiern part |

01L ATI Tinui.n. 412

413

MEDICINE

414 Leave

Flowers

410

that in Burma it is regarded as good for turning C. Heyneana, Wall, Fl Br Ind, I, 174

Burma, and the north-east of Ceylon

Vern -Chavruka HIND References -Data & Gibs , Bomb Ft , 9; Balfour, Cyclob References -Data & Dies, stributed from the South K myn an I Kanara to Travancore, also met with in Ceylon

of the Dekkan, the Eastern Ghats and Carnatic, the Prome distryt in

Structure of the Wood—Write, inductive and what we fit of the dency for plough-shares and rafters

Roxburgh says it is "l-vy, l-v, and durable, the natives employ it for various purposes"

Kurz sem wk.

Oil-"Vields an oil which is used in medicine and for butning" (Bomb Gas, XV, 65)
Structure of the Wood -White, moderately hard, durable; we did

nara to Travancore, also met want of the manufacture of the leaves are used for rheumitic pains in (lef) his and the flowers are made into a laxative drink

C. horrida, Linn f , Fl Br Ind, I, 178, Wight, Ic, 1 173 Syn -C ZRYLANICA, Roxb , FI Ind , Ed CB C , ate Syn — C ZRYLANICA, Roxo, es im., ...
Vern — Ardanda Hind, Sind, Duk; Ulla Make bipang Mali, KiMAON; His, karolla, hidan garna, in ; Karolara, Oubn; hiteri

C. 416

к з

132

| CAPPARIS sepiaria | The Wild Caper berries |
|--|---|
| | |
| | References _D _J E E , K - E E D = I K C = |
| | 277 Balfour Cyclop 18 in most parts of India |
| MEDICINE Leaves 417 Bark 418 Fruit 419 | on the Economic Products of Chutta Naghur) Special Opinion —§ A decoction of the leaves is used in syph lis" |
| FOOD 420 FODDER 421 | (Surgeon Major D. R. Thompson 1st District Madras) Food—In the Southern Panjab and S nd the fruit is made into pickle (Stewart) The twigs shoots and leaves are greed ly eaten by goats and elephants |
| TIMBER 422 | Structure of the Wood — Yellowish white, moderately hard, weight about 47lb per cubic foot Used as fuel |
| 423 TIMBER | Capparis multiflora, Hook f & Th , Fl Br Ind , I , 178 Vern — Suntri Nepal. References — Kurs For Fl Burm I 61 Gamble Man Timb , 11 Habitat — A climb ng thorny shrub of the Eastern Himalaya and |
| 424 | Upper Burma Structure of the WoodWh te moderately hard |
| 425 | C olactfolia, Hook f & Th., Fl Br Ind I, 178 Vern—Nash has Nepal, Themob Lepona References—Gamble, Man Timb 15: 11 Habitat—A thorny shrub of the Sub H málayan tract from Nepal to |
| TIMBER | Assam chefly in the undergro vth of Sissu forests along river banks Structure of the Wood -White, hard, weight about 44lb per cub ft |
| 426 427 | C Sepiaria, Linn; Fl Br Ind I 177 Vern—Hisin garna kius PD. Kanlá gur kámai káliakara Beno Kanik kapáli Ukriv Kanlákr, Gij Niela upp. Tet. Ah nira kaká dan Sans Reletence Roub Ri Ind. Ri C BC 435 Benadu. Ro. Fl. 15 Reletence Roub Bran I 65 Gambi Han Timb in Thomber Enim Ceplan Pl. 15 Dats & G bu Bomb Pl. 16 Alchinon Cat PP. Pl. 107 Vog Hert Sub Cat 75 Murray Drugs and Pl. Sind 54 Royle Ri Him Bot I 72 Balfour Cyclop 4 Royle Ri Him Bot I 72 Balfour Cyclop |
| medicine 428 | cau |
| TIMBER 420 DOMESTIC | ton Sera npore) Structure of the Wood —Wh te hard, pores moderate sized Domestic Uses —The branches make excellent hedges |

| The True Caper-berry. | CAPPARIS spinosa |
|---|---------------------|
| Capparis spinosa, Linn, Fl Br Ind, 1, 173 | 431 |
| THE EDIBLE CAPER | 1 |
| Spn.—C MURRIANA, Graham; Bucht, Ic., t. 379 Vern.—Askes her Hinn. Askes Lanux Turt. Illia kanta. Kunnon. | 1 |

Agur, kirn bauri, ber, bandar, bassar, kakri, kander, taker, barar, keri, kibra kaharra, baran bauri, Pu, Aufean, Sino, Andar, Boms Asharra kahara AFG Andar Robur Arg, Achir, PRS (In Perssa

it is known as Aabar, Arrak) Aabar, Syrian , Aabarish, Turkish 1 - F - F R am I st Comble r - p D f----

Habitat.-This is the plant which affords the Caper berry of Europe It occurs in India in the central and northern parts of the Paniab and in Sind, is less frequent in Raiputana than C. aphylla

Medicine -Dr Stewart remarks that in Langta the roots are said to be applied to soces. The author of the Wakkram-ul-Admiya considers the root bark "to be hot and dry and to act as a detergent and astringent, içici

MEDICINE. Roots

432 Boot-bark 433

> Julce. 434

Rade 435

considered distretic, and was formerly employed in obstructions of the liver and soleen, amenorrhoga, and chronic rheumatism "

Chemical Composition -"The root-bark is said to contain a neutral bitter principle of sharp irritating taste, and resembling senegin flower-buds, distilled with water, yield a distillate having an alliaceous odour. After they have been washed with cold water, hot water extracts from them Capric acid (C10H20O2), and a gelatinous substance of the Pectin group. Capric acid is sometimes found deposited on the calices of the buds in white specks having the appearance of wax (Rochleder and Blas \" (Watts' Dict . Chemistry)

Food -In Europe this furnishes the Caper Mr Edgeworth found the buds (prepared in the style of "Capers") to answer very well as a substitute for the European congener. In India the ripe fruit is either eaten raw or made into pickle. In Sind and in some parts of the Paniab, a compound of oil, mustard, fornu greek, &c . is used in pickling capers In Ladak the leaves are eaten as greens

Fodder -The leaves and ripe fruits constitute a favourite food of goats and sheep.

CHEMISTRY. 436

> FOOD 437 erries. Pickle. 438 Leaves.

430 FODDER. 440

| -57 | |
|---------------------------|--|
| CAPSICUM | Capsicism or Red Pepper |
| 441 | Capparis zeylanica, Linn II Br Ind I 174 Syn — C Acumnata Reab C Brevistina DC Vern - Kalo-kre Bern Authondy kai Tam References - Yough Hort Sub Cal, 74 Dals & C Baljour Cyclop |
| FOOD Pickie 442 | Habitat —Common in the Carnitic and Malabar, o c Western Dekkan and in the drier parts of Ceylon Food —The green fruit is pickled |
| | CAPSELLA, Manch, Gen Pl, I 86 |
| 443 | Capsella Bursa pastoris, Manch , Fl Br Ind I 159 (Shepherd's Purse Pickfocket, Eng Bourse of Fr Hirtenasche Germ |
| medicine 444 | Habitat—A weed in the vicinity of cultivation through a perate regions of India, particularly abundant on the N W H Medicine— This very common weed is buter and punger volatile of on distillation identical with oil of mustard, and has b |
| 445 FOOD 446 | |
| 447 | CAPSICUM, Linn Gen Pl , II , 892 |
| | The greatest confus on sex six in lod an literature as to the cult vale 1 spc c so if Caps cum. Popula lythe larger fin stare usually dee grated Caps cu and the smalle. Chilles. According to Firminger the powdered seeds of it latter const tusts Caysons expepter. That suddhorn in his Manual of Garden for Indias states that the care a great many varieties of Caps cum grown in |
| 448 | DE LIVERTO A THE SPECES A REE CAPSICUM ANNUUM, LINA DC Prodr XIII Pt 1 412 SOLANICE |
| 440 | RED PEPPER Vern -Mallina wängra Lil m reh marcha mirch gachn reh Hind |
| 428 | References —Rook FI Ind Ed C B C 193 Stewart Pb Pl 196 DC Ong of Cult Pl 289 Vogt Hort Sub Cal 510 Plane 1 d 90 p |
| TIMBER 420 DOMESTIC | ton Ser: St Do |

Capucum or Red Pepper.

CAPSICIIM annuum.

Habrat - 1 ray se of edg p stud America, most probably of Brazil Commonly cultivated for its trust though at the planes of India, and on the lower how in a call for its trust the age at the Chenals alles up to altitude (13) lett. When grown on the fills it is said to be very pungent. There are seven a ricties, differing of eils in the length, shape, and co' ur o, the fru t. s me being round, o hers obling, o' tuse, no nied or bid, sm . her rug se, and red, white yellow, or sarregated. It is probable that most Ind in authors have confused this species with C

ELEment wi thice History - The species has a number of different names in Furopean languages, which all indicate a fixeign origin, and the resemblance of the tricle to that if pepper. In I rench it is often called & sere de Guinée (Guinea pepper but also for re du I rent d'Inde (Indian, Brazilian pepper) Ac., den miration to which no importance can be attributed its cul ivation was introduced into I unipe in the sixteenth century was one of the pep, on that Piso and Maxgraf saw grown in Brazil under the name curja or gury They say nothing as to its engin" (DC Orig of Cult Ply "Ch ics are not mentioned by any Sanskrit writer, consequently their introduction into India must have taken place at a comparatively recent date. It is probable that the Portuguese brought the fru t from the West Indes Up to the present time the cultivation of the plan is carried in more extensively at Goa than at any other place on the western coast and cap-cours are well known in Bimbay by the name of Goras much (too pepper) (Dr. Dymo l. Mai Mei W. Int.) Hove alludes to Capsicum as kr min in Bombay in 1787 and expresses no astonishment at its existence in Ir d a

CLLTIVATION OF CAPSICIAN - 'A light well-manured so lis the best for all kinds in which the plants should be picked out at about four inches apart when they attain a growth of three inches, and afterwards put out into a bed of rich light earth when they attrin six inches in height, giving them a good supply of water and keeping them clear from weeds (The Gardener)

Medicine -- Dr Stewart says that the fruit is used externally in the form of plasters and taken internally in cholera, it is eaten from a con-

viction that a counteract, the effects of bad climates As a drug red pepper is considered by the natives as stomachic and stimulant, and is used externally as a rubefacient (Dymock) been employed with success as a topical application to elongated usula and relaxation of the pendulous veil of the palate. Made into a lozenge with sugar and tragacanth, it is a favourite remedy for hourseness with professional singers and public speakers. In putrid sore-throat whether

very usefully employed in fethargic affec

symptomatic of

bitters, tonics and other sumulants in weak states of the stomach, in cold leucophlegmatic hab is dyspepsia and flatulence and as a gargle in relaxed states of the throat it is highly extolled and has also been used with success in the advanced singes of rheumatism. In native practice it is given in conjunction with asafcetida and sweet flag root, in cholera German physicians it is supposed to be particularly injurious in gonorthoea" (Murray s Pl and Drugs of Sind)

Dr Sakharam Arjun says that the fruit is used as a stimulant in snake bite

Chemical Composition -"Bucholz in 1816, and about the same time C Braconnot, traced the acr dity of capsicum to a substance called exprision.

440

450

MEDICINE Plaster. 45X

Lozenge.

452

| CAPSICUM annuum | Capsicum or Red Pepper |
|-----------------------------|--|
| 441 | Capparis zeylanica, Linn, Fl Br Ind, I, 174 Syn — C Acusinata, Resb C Breviseira DC Vern - Kalo kera Beng, Authonoly kai Tan References - Voigt Hort Sub Cal, 74, Dals & Gibs, Bomb Fl, 9, Balfour, Cyclob |
| FOOD Pickle 442 | Habitat — Common in the Carnatic and Malabar, occasional in the Western Dekkin and in the drier parts of Ceylon Food — The green fruit is pickled |
| 443 | CAPSELLA, Manch, Gen Pl, I 86 Capsella Bursa pastoris, Manch, Fl Br Ind, I, 159, CRUCIFERE SHEPHERDS PURSE, PICKPOCKER, Eng, BOURSE DE PASTURE, Fr, HRETEMSCHE, Germ |
| medicine 444 | Habitat —A weed in the vicinity of cultivation throughout the temperate regions of India, particularly abundant on the N. W. Himalaya |
| 011 445 ≨00B 446 | natives as a pot herb " |
| 447 | CAPSICUM, Linn, Gen Pl, II, 892 |
| 448 | be given to all the species at he Capsicum annium, Linn, DC Prodr, AIII Pt 1 412, Solanaceze RED Preper Ven — Mattisa wängrä lai mirch marcha mirch gächmirch Hind |
| 428 TIMBER 420 DOMESTIC 430 | References — Rook Fl lad Ed C B C 103 Stewart Ph Pl 150 en ion Stra St. Do. C. 4 8 |

Capsicum or Red Pepper.

CAPSICUM annuum.

440

Habitat - A native of equinatial America, mait profable of Brazil Commonly cultivated for its tru title cush out the plans of India, and on the lower hills such as in Kastinfr, and in the Chenib salles up altitade 6,5 so feet. When grown on the fills it is said to be very pungent There are seven sprictics, differing of offs in the length shape and ectour of the fruit, a me being regind, others abling, of tuse, pointed or b fid, sm to hier rug see, and red, white, yellow, or a stregated. It is probable that most Indian authors have confused this species with C

emairan, which see History .- "This species has a number of different names in European languages, which all and cate a foreign origin, and the resemblance of the taste to that of pepper. In I rench it is o'ten cal'ed powere de Guinée (Guinea pepper) but al o powere du Brént, d'Inde (Indian, Brazilian pepper), Ac., den ministrons to which no importance can be attributed its cullivation was introduced into I urope in the sixteenth century. It was one of the peppers that Piso and Maxgraf saw grown in Brazil under the name carrier energy. They say nothing as to its origin. (DC. Origin of Cult. P1) "(DC. Origin) the name carrier of Cult. P1) "(DC. Origin) the continuous of Cult. P1) have ritten place at a consequently their nitroduction into India must have taken place at a consequently their nitroduction into India must have taken place at a comparatively recent date. It is probable that the Portuguese brought the fruit from the West Indies Up to the present time the cultivation of the plant is carried on more extensively at Goa than at any other place on the

450

apart when they attain a growth of three inches; and afterwards put out into a bed of nich light earth when they attain six inches in height, giving them a good supply of water and keeping them clear from weeds" (The Gardener).

Medicine .- Dr. Stewart says that the fruit is used externally in the form of plasters and taken internally in cholera; it is eaten from a conviction that it counteracts the effects of bad climates.

Plaster. 45I As a drug, red pepper is considered by the natives as stomachic and

fusion of red pepper are often

stimulant, and is used externally as a rubefacient (Dymock) "It has been employed with success as a topical application to elongated usula ralate. Made into a lozenge, remedy for hourseness with ,n putrid sore-throat whether

Lozenge. 452

MEDICINE.

Chemical Composition .- "Bucholz in 1816, and about the same time Braconnot, traced the acridity of capsicum to a substance called exprision.

136

CAPSICUM annuum.

Capsicum or Red Pepper.

CHEMISTRY.

It is obtained by treating the alcoholic extract of ether, and is a thick yellowish red liquid, but slightly soluble in water. When gently heated it becomes very fluid, and at a higher temperature is dissipated in funts which are extremely irritating to respiration. It is evidently a mixed substance consisting of response and faith matters.

substance consisting of resulous and faity matters
"Felletar, in 1850, exhausted capseum fruits with didte sulphuric
acid and distilled the decoction with potash. The distillate which was
strongly allaine and smelt like conine, was saturated with sulphuric acid,
evaporated to dryness and exhausted with absolute alcohol. The solution, after evaporation of the alcohol, was treated with potash and

isolating it in sufficient quantity to allow of accurate examination

"Dragendorff states [1871] that petroleum ether is the best solvent for the alkaloid of capsicum, he obtained crystals of its hydrochlorate, the aqueous solution of which was precipitated by most of the usual tests, but not by tannic acid.

"The colouring matter of capsicum fruits is sparingly soluble in alcohol, but readily in chloroform. After evaporation an intensely red soft mass is obtained, which is not much altered by potash, it turns first blue, then black, with concentrated sulphurue and, like many other yellow colouring substances. By alcohol chiefly palmatic and is extracted from the fruit, as shown by Thresh in 1877.

The crystals melted at 38°C On keeping them for some days at the

caustic lye removes caps ucin, which is to be precipitated in minute crystals by passing carbonic acid through the alkaline solution. They may

Cayenne Pepper or Chillies.

CAPSICUM frutescens.

be pur fied by recrestall zing them from either alcohol, ether, benzine, CHEMISTRY. glacial acetic acid, er het beu'pt de ef carbon; in petroleum enfratein is but very sparingly so'ultle, yet desolves abundantly on addition of fatty ol. The latter being present in the perseate is the cause why

coffinein can be extracted by the above process.

"The creatals of capsaicin are colourless and answer to the formula Cilino; they me't at 50°C., and begin to solutize at 115°C.; but decomposition can only be avorded by great care. The vapours of coptaicen are of the most dreadful acridity, and even the ordinary manipulation of that substance requires much precaution. Capinicin is not a glu oude; it is a powerful rulufaciert, and taken internally produces

very violent burning in the stemach" (Pharma ograft i.).
Special Opinions. - Stimulant and substraint, useful in dyspep-52; recommended in ir usion as an external application to the eye" (Assistant Surgeon Nel al Sirg, Stat trangur) "Chiefly used as a cond ment and considered to be stomach c" (Assistant Surgeon Anund

Chunder Mocleys, Neathally). "Anti-malarious to a certain extent" (H. D. Masani, Surgeon, H. M.

native, cooling med one. The seeds is used in cholera. In and sore-throat. It is an ir

Deccan, Guzerat, and Cutch" Bombay, Bhuj, Cutch). "The

known, are powerfully irritant

by natives to dog-bites. An infusion made with 4 drams of chillies and a bottle of boiling water has been found useful in severe sore-throat" (Assistant Surgeon Bhagman Dut, Rawal Pindi), "In delirium tre-mens in 20-grain doses" (Surgeon-Hojor George Cumberl and Ross, Delhi).

"Is used in limments as a rubefacient; in cholera pills with camphor and acolom do ...

food - The fruit when green is used for pickling and when ripe is

ound for or daily curries, ginger.

oor can obtain to eat with their rice (Balfour's Cyclop.) Dr. Dymock gives the value of Ghati chillies at R31 per maund, and Goway, R21 to 4 per maund of 28th in Bombay.

Capsicum, fastigiatum, Blume. See C. minimum, Roxb.

C. frutescens, Linn; Fl. Br. Ind., IV, 239.

SPUR PEPPER, CAYENNE PEPPER, GOAT PEPPER, AND CHILLIES, THE SHRUBBY CAPSICUM

455

FOOD.

454

CAPSICUM frutescens

Cavenne Pepper or Chillies

ladamera china, Mal., Menashina kayi, Kan., marichi phalam, brahu or bran maricha? Sans. Filfile-ahmar, ARAB, Filfil i surkh,

the sun

. * * т "1 11 1 Supposed to have m South America. pecies of Capsicum, now cultivated in India, have no Sanskrit names Of the Indian culti----e alea the large + he ng

Opinions differ slightly as to the plants which afford Cayenne pepper Speaking of this species, DeCandolle says 'The great part of the so-called Cayenne pepper is made from it, but this name is given also to the product of other peppers Roxburgh, the author who is most attentive to the origin of Indian plants, does not corsider it to be wild in India" (Orig Cult Pl) Simmonds writes that "the Cayenne pepper of commerce is obtained chiefly from the pulverised chillies or truit pods of one or two species of Capsicum (C annuum, Linn, and C fastigiatum, Blume) So also in the Kew Official Guide (p 100) the dried and pulverised rind of the pods of C annuum and its allies is said

MEDICINE 458

Cavenne

Pepper. 156

Chilles

457

ttent In ague

(Atkinson)

Special Opinions -6' When taken in curry in unusual quantities,

Seed. 459 Cholera mixture 460

in gargles for sore it tout Drigade surgeot a Mr surcore atters et abad) "A powerful stimulant used as a gargle in sore throat, also in

Chilit Vinegar **461** Chilli Extract 462 Powder 463

Bell Pepper Birds eye Chil L

CAPSICUM minimum

and in 1857 in the collection forwarded to the lars Lal bit on (Simmer's Tref Africa, 48).

The pedia cided on a bot plate or in a slow over and then pounded in a morta. The pediction is then paried the cigh a hand in lituility to brought to the feet of the cities of the cities that will be then not presented.

m corked g a s bo tles in use (Trest sy of B tany)

Caps.cum grossum, Well, F7 Br Irl 11 239

461

BELL PIPTER
Vern - Ae'n wan & Brag Han

٠.,

References — Feel, F let Ed CRC spt Full & Hant Phorma guest Demock tot led W let and Files Prixod P mb Pred, 222 LC Ong Cult Pl, 220 Bafour Cylp; Smith D stS mounds Try Agra, Fp

Hab tat.—Not much cultivated in India i may be place uncertain Food.—Culti-need to all mited extenting gardens but clifts for 1 uro-pean who either cut this cap cum in stews of a vestopened stuffed will creat as specs, and pickled in a negar. The tlick fleshy skin is not so hot as that of the other spec.

F00D 465

C minimum, Port Fi Br Ind., IV 239 Wight, Ic 1 1617
Birds fre Chilli

466

Sym.—C. Fatt clatius Fluwer C. Baccat w Ball
Vett.—Gib Momen's Birny Dham-lung ba murgh lanks morth 1st
morth Berg: Lal men's marchi Cvj; Mech lal mech Dug
Gamdigskal Tau i Swder roja kan let; Chai'e Islace ha
(ed pepper) Asam Men Symin Symin symin granger gen syder more
jenyam mayor Birns Symin Symin granger gen syder my

propar noyo Bish in Reletences — herb Find Ed C.B.C. 191 logt Hort Sub Cal. Sto Pharm Ind., 180 Fi A & Hanb I harma og 451 433 J.U. S. D. pens 19th Ed 349 Bentl & Tr. m. Med P. J. 188 U.C. Dutt Mat Med I in 4 21 Dymock Mat Med 8. Int 187 43 331 Barnay Baser Med 35, Draine I revel Proc 371 Stons En 161 Bally Ballow Cy kp Smith De 1915 monthal Tro

Agri 4790

Hab tat.—Cul vated throughout Ind a but not extens vely clo ely

403

| CARALLIA | Small Chillies, Carallia |
|-------------|--------------------------|
| ıntegerrima | Sillan Chinica i Caralla |
| | |

Mixture 469

471

FOOD Roots.

472 FODDER

473

474

MEDICINE

putrid sore throat and scarlatina, also in ordinary sore-throat, hoarseness, dyspepsia, and yellow lever, and in diarrhea occasionally, also in piles '(Baden Powell)

an excet ont pargue in the sore is rout which accompanies this aisense as well as in ordinary relaxed sore-throat, hourseness, &c" (Waring, Busar Medicines)

Food —This small "chilli" is rarely used by natives, but by Europeans is steeped in vinegar and mixed with salt, in this form it is employed as a seasoning in stews, chops, &c

CARAGANA, Lam, Gen Pl, I, 505

Caragana pygmæa, DC, Fl Br Ind., II, 116, Royle, Ill, t 34, fig 2, Leguminosæ

Vern -Tama, dama trama, LADAK, Shmalak SIND

References — Brandis, For Fl., 134, Stewart, Pb. Pl., 61, Balfour, Cyclop.

Habitat — A low shrub very much resembling furze It inhabits the dry highlands of the Western Himalaya, altitude 8,000 to 17,000 feet

Fodder—It is browsed by goats and is much valued for fuel in the treeless regions where it is met with Balfour states that in China the roots of Caragana flava are eaten in times of scarcity

CARALLIA, Roxb , Gen Pl. I. 680

Carallia integerrima, DC, Fl Br Ind, II, 439, Wight, Ic, 1

Syn -C LUCIDA, Roxb , Fl Ind Ed C B C , 396 Kurs 1 , 451

Vetth.—Kierpa Beng, Jur, Kol., Palamkai Nepal., Kujitekra Ass., Punschi Bomb Pansi phansi Mar Karalli, Tel. And punar, phansi Kan Damata davelle, Sing, Bya Arracan, Mantioga, mani-ag, Burm

References — Brandis For Fl 219 Gamble, Man Timb, 177, XY Thwaites En Ceplon Pl 120 Dals & Gibs Bomb Fl 50, Voiet, Hort Sub Cal, 42, Rople, Ill Him Bot, 1, 210, Litbas, U Pl, Bomb 73, Balfour, Cyclop

Habitat —An evergreen tree with thin, dark grey bark, found in the Enstern and Western moist zones, particularly in the Enstern Himálaya, Bengal, Burma, South India, the Andaman Islands and Ceylon

Structure of the Wood -Sapwood perishable, heartwood red very hard, durable, works and polishes well, weight from 42 to 51lb per cub c

TIMBER 475

(Beddorte)

| | - 1 |
|---|-----------------------|
| The Monkey's Horn; Carapa. | CARAPA moluccensis |
| CARALLUMA, R Br., Gen Pl. II. 782 | 1 |
| Plody, erect nearly leafters bette, with very thek subtervice or angulations. The greene Caralism is said to be desired from a South Indovernacilla name. | ar an |
| Caralluma adscendens, Br.; Fl. Br. Ir3, IV., 76; ASCLIFIADE. Verm—Call. malagen, Taw Reference—Yrmer, Fl. and Drogs, Sund, 1°2, Balfeur, Cyclop Habitat.—Met with in and places in the Delkin Pennsula Food—Thus fiethy plant is often eatien by the Natures in the form of | |
| pickles, or is made in o cluthey. | 477 |
| C. edulis, Ber'h: Fl. Br. Ind., IV., 76 Syn.—Boltesona edulis, Eder Vern.—Charg, changa prof., pifa, pifa, sitha, sith, shin gandhal, Pa References—Stream, 13. Lia. 1213 Autohiem, Cat., Ph. Pl., 50. Mu ra., Il and Oraga, Sind, 1°2; Baden Lorell, Ph. Pr., 2°4, Balfont Syth | - 1 |
| Hab tat Found in the arid tracts of the Pangib and Sind | FOOD |
| • | 479 |
| C. fimbriata, Wall; Fl. Br. Ind., IV., 77 MONEY'S HORY Vern.— Malar-nig, Boms References—Dals, & Gist, Bomb Fl., 155 Voigt, Hort Sub Cal., 535 Lisbon, U. Fl., Bomb, 145, Habitat.—Met with in and rocky places of the Dekkin Peninsula, from | 1 |
| the Konkan southwards, and also in the Ava district of Burma. Food.—In the Bombay Presidency the plant is caten as a vegetable Carambola. See Averthoa Carambola, Linn, Geraniacez | F00D. 481 |
| CARAPA, Aubl , Gen Pl , 338 | 1 |
| Carapa moluccensis, Lam, II Br. Ind., I, 567, Bidd., Fl Sylv 136, Meliacez. Syn.—C OROYATA, Bl (Kurs, 1, 229); XYLOCARPUS GRANATUM, Kan | , 482 |
| Vern -Pothur, pussur, BENG Kandalanga, Tan ; Pinlayo ing, pinl | [|
| Habitat.—A moderate sized evergreen tree of the coasts of Bengal | ·l |
| semi-solid fat This as a hair-oil, and also C. 484 | |

CARBONATE OF LIME.

Carbon: Indian Lime.

MEDICINE Bark 485

timber 486

Weight about 45 to 50th per cubic foot

· m L -1

Used in Burma for house posts, handles of tools, and wheel-spokes. Oaptain Baken, in May 1809, in Gleanings in Seisenes, spoke of Pussif or Pussiah as being a jungle wood of a deep purple colour, extremely brittle and lable to warp. He said that native boasts made of the best species last about three years, and that the wood, if of good quality, stands brackish water better than all

Caraway. See Carum Carul, Linn , UMBELLIFERE

487

CARBON.

Carbon.

References.—Pharm Ind., 289, Moodeen Sheriff Supp Pharm Ind., 87 U S Diepens, 15th Fd., 351, Baden Powell, Pb Prod., 608 91 Ure, Dict of Arts and Blassylatiness, 710

MEDICINE. 488

Bhatlacharys, Chanda, Central Prosunces) "The charcool of Areca nut is a good tooth-ponder" (V. Ummeguden, Methodium, Madros) "Fine powder, with symp or treacle, useful in sloughing dysentery" (Surgeon-Vayor C J McKonna, Campbor) "Animal charcool is a blood purifier, and as such is of great value in bols" (Surgeon-Major of the Company of the Company

480

CARBONATE OF LIME.

Carbonate of Lime.

CARBONATE OF LIME, MARBLE, LIMESTONE, CHALK, and

Vern -- Lime -- Chénd chénah chunnah, Hino Chun, chuna, Beno, Chunah, dhak, (quehlme) kalai (takked) Pa, Chuno, Guj, Chunnd kali chuna Man, Chunah, chunah, Dur, Chunamba, shunnahom, Tam, Sunnam, sunna, Tel, Capur, nura, Malyal, Sunna, Kan,

Indian Lime.

CARBONATE OF LIME.

```
Eudhi, churna santta-thasm, karariata thasma, sutti-thasma,
  kukadhasma, 5555, hili ahu Aren, Aurah ahak, Peus 3 Hunud,
Auru, Sing , Th n-fhisu Biru ; Aifor, Malah
    1 . en segui Mign e .. Lala lamattar safe d'hattar sann i mar
  CHALK - Ahari-me ti HIND, PR: Ahari metti, BENG; Vildyati-chuna, MAR; Chek tilati-chund, GU; Lildyati-chunda, DUK; Shi-raa, shannambi, Tha Shima sungum, Br., Shimamra, MALAY;
  Shima sunni, Kan Ka'ruhunu, Sing , Mieghian or mebiyu, thome
   ton Birm
     I ASLAND LINY - Kali ki-chang, HIND . Kar shunnambu. TAM s
   Ralla sunnamu, TEL
References -Pare, Hant-book of Geology, &c , Dana, Manual of
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The further Bittiography of Limit, Limestone, Marble, and Kankar will be found in Ball's Fconomic Geology, pp 625, 627.

1 -- 1 1 - 2 4 - tean ad a 0 and not readily obtainable. Lime is also intimately associated with many industries, and plays a distinct part in the manufactures which fall fairly within the scope of the present work. It has therefore been thought desirable to give a brief abstract of the available information regarding Lime, Limestone, and Marble. See MARBLE 37 - - 1 111

Marbie.

producing the colouring and veining, and from the presence of imbedded shells, corals, or other organisms (See Marble). 11 ~

Limestone.

the eye of the e muriati

vert it into quicklime 222 0

Chalk.

dissolves readily in dilute muriatic acid, and gives no precipitate with the addition of ammonia water.

ADDONATE OF LIME

Indian Limo

Time.

IV. LIME is an oxide before being slaked with a

to its corresive property.

OF LIME deprived of its

into Calcic Hydrate (CaH2O2) which on being mixed with sand forms more or cement "As an earth, lime is properly disseminated in nature. as a rock, it enters largely into the composition of the earth's crist, it is less or more diffused in all its waters, it forms the principal ingredient (earth of bone) in the skeletons of the larger animals, and is secreted by many classes of the invertebrate to form their shells, crusts shields corals, and other means of protection Economically it is also of vast importance, being used in the manufacture of mortars and cements in tanning, bleaching, deodorising, and the like, and also in agriculture as a fertiliser or promoter of vegetable decays" (Page)

TORMS OF LIME USED IN INDIA

There are three kinds of lime used in India (a) lime prepared from limestone. (b) lime found on the surface of the ground and known as kankar, and (c) lime prepared from fresh-water or marine shells.

(a) LIME PROM LIMPSTONE

LIMESTONE 400

Speaking of the distribution of limestone and marble, Mr Ball in "Economic Geology' says "Limestones can hardly be said to be his "Economic Geology' says "Limestones can hardly be said to be absent from any of the formations in India, though in some they are either rare or so impure as hardly to deserve the title. In the metamorphic series, bands of crystalline limestones occur locally in some abundance

found in the Bhanrer group, where they sometimes attain as great a thickness as 260 feet, and are used both as a building stone and for lime

"In the Gondwana series, limestones are rarely met with, and then chiefly in the Talchir and Ranigani groups, where they occur as lenticular or concretionary masses

"In the rocks of cretaceous age, within the peninsula, limestones of both sedimentary and coral reef origin occur The other sources of lime are principally sub recent and recent tufaceous deposits of kankar, traver-

"In the extra peninsular regions the principal formations containing I mestones are of carboniferous, jurrassic cretaceous, and nummulitic ares Another source of lime is recent coral. On the whole it

> rk. a de∗ to prov-

49I

hinopoly. open ng

of the railways, have largely replaced the kinkir formerly employed for LIMESTONE

1-1-a- 1 1---

CARBONATE OF LIME

C. 500

| building purposes in the Presidency | |
|--|------|
| In Lengal, although | 492 |
| of Ind 3, workable ston | 49- |
| supplies are practically | |
| and Lohardaga In th | |
| peculiar interest because of their proximity to iron ore | |
| In the Central Prominces, limestones occur at Sambalpur, Raipur, | 493 |
| and Jabalpur, the latter consisting of the famous marble rocks of that | |
| name Limestones also occur throughout the Vindhya range, the most | |
| accessible being in the neighbourhood of Warora. At Raipur a stone suitable for lithography has been found | |
| In Autch, limestones of different ages are met with, but those most | |
| esteemed belong to the lower Jurassic group | 494 |
| In Southern Afghanistan limestones of creticeous age abound, and in | 495 |
| Baluchistan nummulitic limestones are found in the eastern frontier as | 4,5 |
| well as in Northern Afghanistan In the latter the Safed Sang takes its | |
| name from a beautiful Statuary marble | |
| In the Panjab, marbles and limestones in considerable variety and | 496 |
| from different geological formations are met with | " |
| In the North-West Provinces and along the Tarai to Darpling lime- | 497 |
| stones are not infrequent. An account of these may be found in Atkin- | 77. |
| r Mallet | |
| Speak- | |
| s Hima | |
| Tal, at | |
| Bageswar and Almora, at | |
| Baitalghat, and Dhikuli for inagur Lime is also made | |
| al Two kinds of limestone | |
| are used in the larger of he one he to all all and to the beauty | |
| the foot of the kun | |
| the other is the tufa | |
| th's latter kind, how | |
| stone costs at the q | |
| by the Forest Depar | |
| averaged at half a rupee per mile for a 100 maunds. Thus the stone is | |
| landed at most points in the district for \$30 per 100 maunds and including the expense of burning, a maund of lime costs 10 to 12 annas | |
| This lime will bear two or three portions of pounded brick or surki | |
| Second class time ready for use now costs R25 and delivered in Naini | |
| Tal R50 to R100 per 100 mounds, it will, however, only bear a propor | |
| tion of one part of pounded brick to two parts of lime? | |
| In Central India at Gwahor an abundant supply of flaggy I me- | 498 |
| stones occurs | |
| In Rajputana the Arvali group of transtion rocks includes many | 499 |
| variet es of marble, some of them being of great beauty. The Jhirri quar- ries of Alwar afford hard white marble. Black marble is met with at | |
| Mandla, near Ramghur, white as well as pink and grey marbles at Rainlo | |
| in Taipur But the most extensive marble quarries of Raiputana are at | |
| Makrana in Jodhpur This marble has been celebrated for ages, the [4] | |
| of Agra being built of it. | |
| In Bombay, there are numerous local ties where limestone occurs but no | |
| | 500 |
| marble In the Panch Mehals, good building limestones are obtained but | 500 |
| not hydraulic, and in Guzerat more or less calcareous rocks are met with | ;,00 |

L

CARBONATE OF LIME.

Indian Lime

| LIMESTONE 501 | In Assam, in the Brahmaputra Valley, nummulitic limestones occur at several localities, the southern face of the Khásia and Jamtya Hills affording an inexhaustible source of supply, known in trade as Sylhet |
|---------------|--|
| 502 | line |
| | •• |
| 503 | district. In the Andaman Islands, an important supply of lime, for Calcutta, is afforded by the coral reefs. The writer has been favoured, by Mr. H. B. Medlicott, with the following brief account of the important commercial limestones of Inda.—Lime is a scarce article in many parts of Inda. Much of the lime used in Calcutta is carried many hundred miles be river and railway difficulty in working the iron furnaces in the Ranqian; coal-field. The most general source of building lime in India is kankar or kunkur (meaning gravel), a granular or nodular stone found on the surface and in the sub-soil. It is purely of secondary origin being formed on the spot by the evaporation of the ground-water, containing in solution more of the sub-soil in the sub-soil of the ground-water, containing in solution more of the sub-soil in t |
| 504 | |
| | |
| 505 | |
| 506 | |
| 507 | |
| 508 | Port Blast which may prove of economic importance, as it is at about the same distance from Calcutta as Katni, and the lime is of equally good |

quality
"Other localities where limestone is known are numerous but at present list of them, as far as they are known, will be found in the Manual of the Geology of India, Vol 111, p 449, et seq"

Indian I Ima

CARRONATE OF LIME

ON KINEIR OF CONCESSIONIES LINE

WANDAD. 500

KANKAR (KUNKUR) .- "Throughout the plains of Upper India the principal source of time is the kankar which is found in nodules and lavers of various sizes in the clays of the Gangetic alluvium. It yields an excellent but somewhat hydraulic lime" (H. R. Medlicott, See also

the remarks under I mestone.) ' bankar' (which really means any kind I for concretionary carbonate of lime,

and externally of a mixture of carbonate of time and clay. The more massive forms are a variety of calcaceous tufa, which sometimes forms thick beds in the alluyium, and frequently fills cracks in the alluvial deposits or in older tooks

"In the beds of streams immense masses of calcarcous tufa are often found, forming the matrix of a conglomerate, of which the pebbles are derived from the rocks brought down by the stream. There can be no

"As a flux for iron, kankar has been tried on several occasions, and l commons are somewhat divided as to its applicability to the purpose; but owing to the uncertainty of its composition, it is distinctly less well adapted than rock limestones which have a well-defined average composition, even though in the latter the proportion of carbonate of lime may average something less.

"Block kankar has been largely employed as a building-stone, more particularly in connection with the Ganges Canal Works" (Ball) Most of the roads in Northern India, and indeed in India generally, are metalled with kankar.

(c) SHELL-LIME.

SHELLS.-Ainslie, in his Materia Indica, mentions lime produced by SHELL-LIME. burning the sea-shelfs, called in Tamil kullingte chunambu Dr. U. O

511

510

CARBONATE OF LIME.

Indian Lime

SHRIT-TIME that I have visited by burning the shells of the genus OSTRFA, which aha in a

> aha elobosa.

LIME ESSENTIAL TO VEGETATION.

AGRICUL-TURAL USES 512

INDUSTRIAL PURPOSES.

INDUSTRIAL. USES.

Dve -Lime is universally used by the Manipuris to assist in the transformation of green into blue indigo and to deepen the blue colour of indigo, and a small piece placed in the mouth of a vessel containing indigo is also supposed to preserve the dye (See Strobilanthes) Lime is em-ployed in the Rajshahye district for dyeing thread dark blue, of this

Dye adjunct 513

> Tans of the North-West Provinces, gives a preparation of blue printing ink of permanent colour A mixture of 4lb of shell-lime, 10lb of stone lime, and 15th of impure carbonate of soda (reh), with 3 gallons of water, is strained through grass, to this is added ith of sulphurate of arsenic and Kalico printing ilb of indigo, the mixture is then boiled "till it assumes the metallic greensh blue lustre of the peacock's tail. It is then thickened with babut grun and is then ready for printing." Sir Edward further remarks 514

A paint 515

Tanning 516

Encycl . II . 1221)

Indian Lime.

CARBONATE OF LIME.

MEDICINAL USES

Medicine —According to Dutt, in the Hindú Vateria Viclica (ρ δ2) lime is used internally in dyspepsia, enlarged spleen, and other enlargements in the abdomen, and externally as a caustic. A mytture of lime, carbonate of soda, sulphate of copper and borax, is applied as a caustic to tumours and warts. It enters into the composition of several prescriptions for different forms of dyspepsia, such as Amrita vata and Agrikumara

Ainslie says the Vytians prescribe lime water mixed with gingelly oil and sugar in obstinate cases of gonorrhor: "Mixed with gamboge, quicklime is applied externally to prinful and gouty limbs. It is also used as a caustic in the bites of rabid dogs" (S. Arjun, Bomb. Drugs) The exhaustive account of the medicinal properties of lime given b Dr. Warings in his Bazar Medicinas (§ 85) may be here quoted, since by doing so it will practically be unnecessary to refer to other authors—

ca (p 82) MEDICINE.

518

lime is deposited at the bottom. In cases of emergency, as burns, &c., half an hour is sufficient for this purpose, otherwise it should be allowed to stand for thele hours at least before being used. It is only the clear water which holds a portion of lime in solution, which is employed in me-

milk.

519

the cose of the east water is nort 15 to 20 drops or minimis in think, twice or thrice daily.

"In acidity of the stomach, in heart-burn, and in those forms of in-

is best given in milk,

"In diarrhas arising from acidity, line water frequently proves used in its best given in a solution of gum arable or other muchage, and in obstimate cases to drops of laudanum with each dose increase its effect; it may also be advantageously combined with Omun water. In chronic dysentery the same treatment sometimes proves useful Enemas

CARBONATE OF LIME.

water

Indian Lime.

MEDICINE.

been thought to arrest even the black vomit of yellow fever. It is also a

520

chirges have in some instances been mitigated and even cured by the use of vaginal injections of a mixture of t part of lime water and 2 or 2 of

"In scrofula, lime water in doses of § ounce in milk, three or four times a day, proves beneficial in some cases, it is thought to be especially adapted for those cases in which abscesses and ulters are continually forming To be of service, it requires to be presevered in for some time. Scrofulous and other Town in the service is the service of the service in the service in the service is the service of the service in the service in the service is the service in the service in the service in the service in the service is the service in the service in the service in the service is the service in the service in the service is the service in the service in the service is the service in the service in the service is the

ulticulters of tha ture of lime water \frac{1}{2} pint and calonies 30 grains, this, commonly known as black

wa et either pure of conjoined with on 10 sore or cracket nipples it proves very serviceable. Diluted with an equal part of water or milk, it forms a useful injection in discharges from the nose and ears occurring in scrolulous and other children.

"In Consumption, lime water and milk has been strongly recommended as an ordinary beverage The same det-drink has been advised in Diabetes, but little dependence is to be placed upon it as a curse, it

may produce temporary benefit

or :

ol

521

tituluat in preventing 1 tiling in small pox.

LIME AS A CONDIMENT

FOOD In pan. 522

523

alluding to the use of time in par, says, "when used for any lengthened period, it considerably modifies the natural condition of the mucous covering of the mouth, and alters the appearance of the tongue so as to render it useless or fallacious as a means of diagnosis in disease. Its use in moderate quantities does not appear to act prejudicially on the system, but when largely indulged in, it lays the foundation of much visceral disease."

Indian Lune

CARBONATE OF LIME.

DOMESTIC AND OTHER USES

Manne. As a manure, lime plays an important part. It is largely

Domestic. Manure 524

are not so diversified as is desirable. A dressing from 1,000 to 5 000lb of lime may be applied per acre, according to the price at which the lime can be obtained '(II R Robertson, Agriculture, 13)

I me is often employed as a deodorising agent, "It is mixed with decaying vegetable matter and with numal bodies, with the view of hastening their destruction and preventing the excipe of offensive and novious effluxia. This effect time produces by its tendency, in common with the other caustic likines, to carry the decomposition through the intermediate stages of putrelaction at once to the ultimate products." (Morton, Cyclop, Aericulture, Vol. 11, 265)

Soap—Lime is used in prepring sorp according to Lunge's method, which is destrobed thus "A flu-hottomed prin is preferred for making which are produced any given quantity of nater and bed lime equal to 12 per cent of the weight of fatty matter. The holed lime equal to 12 per cent of the weight of fatty matter. The holed lime equal to 12 per cent of the weight of fatty matter. The holed lime equal to 12 per cent of the weight of fatty matter. The holed lime equal to 12 per cent of the holed lime equal to 12 per cent of the hole of the part of the weight of the part of the hole of the part of the part of the hole of the part of the bottom of the part of the bottom of the part of the bottom of the part of th

carbonate flakes on sufficient the separimportant

Mortar and Cement ~ The use of lime in the preparation of mortars and cements is too well known to require any special description. The following paragraph from Miller's Chemistry, Part II, 405, 18, however, quoted here, as it will be found structure. "The great consumption of line in the arts is for the purpose of making mortars and cements. Pure linee, when made into a paste with water, forms a somewhat plastic mass which sets into a solid as dress, but gradually cracks and falls to pieces the does not possess sufficient cohesion to be used alone as a mortar, to remedy this defect and to prevent the shrinking of the mass, the addition of soul."

Cement. 526

Soap

525

burnt lime, a suitable quantity of water is alterwards worked into it, and it is then applied in a thin layer to the surfaces of the stones and bricks which are to be united. The bricks or stones are mostened with water before applying the mortar, in order that they may not absorb the water from the mortar too rapidly. The completness of the subsequent hardening of the mortar depends mainly upon the thorough intermixture of the lime and said.

CARBONATE OF POTASH.

Sources of,

the feet, now employ for surkhi granding steam power to drive heavy rollers which work in a strong from basin For further information see Cement.

527

Carbonate of Potash.

To fada .

POTASHES, PEARL-ASH; CARBONATE DE POTASSE, Fr., KOH-LENSAURES KALI, Germ

16. 1

Vern -Sarjika, Beno , Jon khur, wak chhar or ouk chhar, HIND ;

Potashes 528 Pearl-ash, 529 Conf with A spans Encyclop , p 253 , Baljour & Lyclop

The mon-oxide of the metal Potassium is known commercially as

rapidly absorbs moisture if exposed to the atmosphere, forming thereby a thick oily liquid known as Oleum tartars per deliquium. If subjected to dry heat it melts at 800°, but loses a portion of its carbonic acid at still be after temperatures and the still see Acid decomposition.

arce of carbonate of po-

ceous annuals contain more pearlash than woody arborescent plants but even of the same plant the succulent young parts are more highly charged than mature tissues. Of different plants pines contain on an average only 0.45 per cent, oaks 0.75 to 1°5 per cent, vine shoots 5.50, ordinary straw \$8, ferns from 4.25 to 8.6, Indian corn stalks 17.5 nettles 25.03, wheat straw before earing 41.0, wormwood 73.0, and beet about the same amount.

These facts naturally suggest the plants best suited for the preparation

Indian Manufacture of

CARBONATE OF POTASH.

clarified and the crystallizable sugar extracted, the remaining liquor is SOURCES OF permitted to ferment, that the uncrystallizable sugar may be turned into alcohol and so utilized, but in the stills there will yet remain a waste liquor, and it is in this that abundance of potash salts occur. By evaporating this liquor in a long trough divided across into an evaporating and a calcining section, a salt is finally obtained, consisting of a mixture of potassium chloride, sulphate, and carbonate (together 50 or 60 per cent.) with insoluble matter and a good deal of sodium carbonate. The potassium carbonate forms about one-third of the weight of the calcined mass, and arises in a great measure from the destruction, during the calcining process, of the po assigm oxidate, tartrate, and nitrate which occur naturally in the beetroot, and, consequently, in the liquor from the still" (Prof Church in British Manuf Ind.) This instructive account of the extraction of carbonate of potash from the waste of beet-root has been repro-duced here because of its direct bearing on many of the native contrivances employed in India for the preparation of pearlash. It would be almost impossible to over-estimate the extent to which a crude carbonate of potach is employed by the people of India. In another volume under Alkaline Ashes (A 759, also A 1626) will be found an enumeration of the principal plants used by the natives of India for that purpose, and these should be compared with the plants given under Benila (B. 163) as employed in the manufacture of carbonate of soda. Although in India immense tracts of mountainous land are injuriously covered with various species of wormwood (see Artemesia), except as a manure, the ashes of these plants are not apparently utilized. From the high percentage of carbonate of potash which the wormwoods contain, the preparation of pearlash might be confidently recommended to the poorer inhabitants of these regions as a useful new industry. A large export trade might reasonably be anticipated from the Himálayas to the plains of India, if not to fore gn countries

While this is possible, an equally profitable industry might also be organised in preparing the carbonate from the injurious amount of saltpetre Wormwood Asb. 530

The Carbonate from Saltpetre. 53 I from the

tectmeation of spirit, b eaching, and in | Turkey-red. Dyeing,

537 Rectification of Spirit 538 Bleaching. 539

CARBUNCLE.

Carbonate of Soda: Carbancle.

CARBONATE of POTASH.

wood on the hills and from saltpetre on the plains seems, therefore, worthy of consideration

Yearly Production.- 1 he world's annual production is about one million hundredweights

MEDICINE 540

Medicine. - Carbonate of potash is antacid, then alterative and diuretic, and in over doses poisonous. It is described in Hindu works on medicine "as stomachic, laxative, diuretic It is used in urinary diseases, dys-

emcacious remedy (U C Dutt, Mar Alea 11:na, 0/)

Special Opinions - § "An impure carbonate of potash (papada khara) is also sold in the Bombay bazars, and is used in the preparation of papada (papun), or little cakes made with the meal of the different sorts of dhall and a little quantity of asafortida, these are given as a digestive, but more as an article of food than medicine, the cakes are roasted over the fire and taken with rice" (C T Peters, MB, Zandra, South Afghanistan) For further information see Alkaline Earths, Barilla, Potash,

REH and SALTPETRE

541

Carbonate of Soda. Vetn — Sajji, sajji-milti, sajji khar, Hind , Sajji, Beng , Chour ki-matti, chour ki namak Dun , Sajjekhara Man , Shach chi karam, Tam , Lota sach chi Tel. Qili, milhul-gili, Arab , Shikhar, tinegasur, Pers , Sarjikakshara, Sans

References -Pharm Ind , 322, S Arjun, Bomb Drugs, 160, 161, U. S Dispens, 1321, Ure, Dict of Arts and Manufactures, 854.

MEDICINE. 542

Medicine -- A substance too well known to require any special descrip-(See remarks under the preceding and under BARILIA, SAJJI, and
) It is antacid and then alterative "A paste made of equal parts of yavakshara and saits kakshara with water is applied to abscesses for the purpose of opening them" (U C Dutt)

Special Opinions .- § "Carbonate of soda (impure), bangada khara, being the residue left during the manufacture of glass bangles. A second form, which appears to be a purer carbonate of soda, is called Surati khara, both are used in the treatment of dyspepsia" (C. T Peters, M B. Zandra, South Afghanistan).

CARBUNCLE.

543 Carbuncle.

"The Carbuncle of the ancients is garnet cut, as it is called, en cabu-The art is still practised in India, and the stones, when of good

Calcutta. 544 South India. 545 Bombay. 546 Burma,

547

The garnet when cut as a Carbuncle is convex above and hollowed out below, so as to leave but a thin layer of the stone through which the light passes, revealing the bright colour. The finest carbuncles are said to come from Pegu and Ceylon. Conf. with Carnelian.

CARCHARIAS, Muller and Henle , Day, Fishes of India, 710

548

CARDIOSPERMUM

Halicacabum

| Carcharias.—Several species of sharks are employed by the intuies of India in the preparation of a med annil of In seems probable that the sharks specially selected for this purpose belong to the genus. Carcharias Of these C gangetiers is the most ferocoops it ascends the rivers to about the limits of the tidal influence. C, hemodon also goes up the rivers specimens having been cuight near Calcutta. Several other species are frequent in the Red Sex and Indian Ocean, particularly on the coast of Sind. (See Sharks and Shark Tins.) | |
|--|--------------|
| CARDAMINE, Linn ; Gen Pl., I., 70 | |
| Cardamine hirsuta, Linn, Fl Br Ind, I, 138, CRUCIFFRE References—Throates Fn Cerlon Pl, 14, Dals & Gibs, Bomb Fl, 7, Strant, Ps Pl, 13, Treasing of Bolany | 549 |
| Habitat.—A herb found in all the temperate regions of India, very abundant in Bengal during the cold weather Food —The leaves and flowers constitute an agreeable salad, resembling water-cress | F00D. 550 |
| Cardamom, see Amomum subulatum, Roxô, —the Greater Cardamom, and Elettana Cardamomum, Maton—the Lesser Cardamom | |
| Cardamom seed oil, see Amomum subulatum, Roxb | |
| CARDIOSPERMUM, Linn., Gen Pl , I , 393 | |
| Cardiospermum Halicacabum, Linn, Fl Br Ind, I, 670, Wight, Ic, t 508, Sapindace. | 551 |
| BALLOON VINE, HEART PEA OF WINTER CHERRY | ľ |

Habitat -A climbing herbaceous plant plentiful in the plains of India. chiefly in Bengal and the North West Provinces, is distributed to Ceylon and Malacca Tendrils are modifications of portions of the flower bud fruit triquetrous inflated

Vern. Latephatkars, nayaphatks, noaphutks sibjhul, Beng, Hab ul kalkal (seed) PB , Karolio Guj , Kanpl uts bodha, slib jal

Medicine -The Root is used in medicine as an emetic, laxative stomachic, and rubefo on

MEDICINE Root, tonic properties. 552

Вомв, TEL , Sfa la 1, 11, Dutt, ymo k, Argun Irea fason s

| MEDICINE. Leaves 554 | tonic in fever, and a diaphoretic in rheumatism." The fried LEAVFS are said to bring on the secretion of the menses. The following prescription is given by Dr. Dutt as A Hindu cure for amenorrhea. Equal parts of Jyautishmats leaves, saryiká (impure carbonate of potash), Acorus Calamans root (wacha), and the root-bark of Termusalis tomestoss (atama) reduced to a paste with milk, taken in doses of about a drachin for three days (Mat Mat Hindus)." On the Malabric coast the leaves are |
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| | d d ith castor oil, are inter- |
| Plant. 555 | Vixed with siggery and es The whole PARAT, body in bilious affective matism and stiffness of the limbs. The plant, steeped in milk, has |
| Juice. 556 | . |
| FOOD. Leaves. 557 Seeds. 558 | Dutt, Drury, S Arjun) Food - "In the Moluccas the LEVVES are cooked as a vegetable" |
| | CARDUUS, Linn, Gen Pl, II, 467. |
| 559 | Carduus nutans, Linn; Fl. Br. Ind, III, 361; COMPOSITE |
| 339 | THE THISTLE |
| | Vern —Kanchart, liso, biddsward, Ps., Guli bådawurd, KASHMIR References —Stewart, Pb. Pl., 123, Baden Powell, Pb. Pr., 356, Dymock, Mat. Med. VI. Ind., 356, also and Ed., 460 |
| MEDICINE. Flowers. 560 FODDER | Habitat —A tall stout thistle, found in the Western Himalaya, from Kashmir to Sinda, at an altitude of 6,000 to 12,000 feet, also at Hazara in the Panjib, and in Western Tibet, at an altitude of 13,000 feet. |
| 561 | for Cratægus) |
| DOMESTIC 562 | Domestic.—Murray remarks that the leaves are employed to curdle milk. |
| _ | CAREYA, Roxb., Gen. Pl, I., 721 |
| | num filaments and accordance of the filaments filaments absorbed, seeds numerous |
| | \ A genus, containing only 3 species and these confined to India, named in honour of the Rev. Dr. Carey—one of the distinguished Serampore Missionaries—a distinguished botanist and a contemporary of Dr. Roxburgh's |

C,562

CAREYA

arborea

| Careya arborea, Roxb, Fl Br Ind., II, 511; Bedd., Fl. Silv, 1 205, Bigbi Ill, 99, 100, Mirricex | 563 |
|---|------------------|
| Vermi simbilers me simbi simbs simble esimbir esimbir elimini. | |
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| Refetchees - Root. Fl. Ind. Ed. C. B.C., asj. Dalt and Glob., Bom. Fl., os. Brandist, For Fl., 185, Mar., Fr. Fl. Burm. J., 499, Gamblef, Butt. Timb. 197, Threates, En. Colon. Fl. 119., Stewart, Fb. Fl. 95, Timb. 197, Threates, En. Colon. Fl. 119., Stewart, Fb. Fl. 95, Fort. St. Baden operation Science. State of Colon. State of Colons and Results, Guns and Results. | |
| zr . | |
| Makest - A larma docid o tron h. h. h. t. | |
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| • | |
| Gum.—Yields a brown or greenish brown gum, regarding which but little is known (Alkinson) This forms with water a tolerably thick mucilage of a dark brown colour (Dymcek) | gum 564 |
| Dye and TanBark used for tanning (Kurz) The Rev A Camp- | TAN. |
| bell says that in Manbhum the bark is used as a dye | Bark. |
| Fibre -The bark yields a good fibre for coarse cordage. (Gamble, | 565 DYE. |
| Campbell, &c.) Lisboa remarks that the bark affords a stuff suitable for brown paper of good quality," Tasar silkworms feed on the leaves | Bark. |
| (C P Gas, 1870, 504) | 566 FIBRE. |
| Madena _Than pr odere 1 | Bark. |
| | 567 |
| · · | Paper making, |
| | 568 |
| Cumpbell, Manbhs | MEDICINE Bark |
| child b rth They heal ruptures cau | 560 |
| "The CALICES of | Infusion |
| kumbha, they are clove shaped, 4-partite fleshy, of a greenish-brown | 570 Flowers. |
| , | 571 |
| | Juice. |
| | 572 Fruit |
| | 573 |
| Бото Drigs, 551 | FOOD |
| Food -The tree blossoms during the hot season, the seed ripening | Seed |
| about three or four months after (Roxb) The Rev A Campbell says | 574 Fruit. |
| the fruit is eaten by the Santals, and is also used medicinally, as are the | Fruit. |
| flowers The fruit, known as khuni, is eaten in the Panjab, it is also | 575 Seeds. |
| given to cattle The seeds are said to be more or less poisonous | 576 |
| | |

| 158 | Dictionary of the Economic | | | | | | | |
|------------------------------------|---|--|--|--|--|--|--|--|
| CARICA Papaya TIMBER. 577 | The Papaya or Papaw | | | | | | | |
| | Start to of the Wood _Sourced by the force board and dull red, beauti- | | | | | | | |
| | ght from brought Mishmi seing cut | | | | | | | |
| | Says "the cabinet-makers of Monghir use the wood for boxe. It takes a polish, is of a mahogany colour, well veined." It is being trade for railway sleepers on the Eastern Bengal and Northern Bengal State Railways, but the results of the experiment are not yet known. Kurz remarks that it is used in Burma for gun stocks, house-posts planking, carts, furniture, and cabinet-work but is too heavy for such purposes. It stands well under water and is much admired for axles. "It is frequently em- | | | | | | | |
| DOMESTIC Slow-match 578 | | | | | | | | |
| | ' | | | | | | | |
| Tinder 579 | ing sanctity (Durm Gas, 1, 129). The timber was formerly used for making the drums of sepoy corps" (Drury, UPI) | | | | | | | |
| 580 | Careya herbacea, Roxb, Fl Br. Ind, II, 510; Wight, Ic, 1 557 Vern Ehus dalim, Beng, Chima, Nepal, Bhumt darimba Sins References Brandis, For Fl, 237, Kurs, For Fl, I, 499 Gamble, Man Jimb, 199 | | | | | | | |
| 1 | Habitat —A small undershrub with pink flowers which appear from Pebruary to March Common in the Tarai from Kumaon to the Kha a Hills and Chuttagong Also plentiful throughout the plains of Bengal, Oudh, and the Central Provinces | | | | | | | |
| | CARICA, Linn; Gen Pl, I, 815 | | | | | | | |
| 581 | Carica Papaya, L, Fl. Br Ind, II, 599, PASSIFLOREZE THE PAPAW OF PAPAWA TREE | | | | | | | |
| | Ve- n ' n, n | | | | | | | |
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| | · | | | | | | | |
| | References — Rosb. Fl. Ind., Ed. CBC., 736 Brandis, For Fl., 244, | | | | | | | |
| | | | | | | | | |

RESIN.

582 FIBRE.

583

MEDICINE.

Jaice.

The Papaya or Papaw. CARICA Papaya.

Habitat.—A sub-herbaceous, almost branchless tree, commonly cultivated in gardens throughout India; from Delhi to Ceylon. Fruits all the

by the modern Indian names being evidently derived from the American word papta, itself a corruption of the Cario babbar. Aliashe says it is a native of both Indies, an opinion held by many propular writers, but not supported by modern botanists. Alkinson regards it as introduced into India by the Portuguese Brandis tells us that its Burmese name, thimbaurlin, means fruit brought by sea-going vessels. In 1026, seeds were sent from India to Naples, so that the tree must have been introduced into India at an early date or shortly after the discovery of America. It is generally ducesous, the female flowers sessile, and the male on long peduncles. Sometimes, however it is monoccious or the flowers even hermaphroduce.

Resin.—Evudes a white resin (Kurs)

Fibre.—Or Dymock recommends the fibre from the stem to be eva-

is r juic pos

ther confirmatory evidence has more recently been added by M. Bouton (Med. Plants of Mauritius, 1857, p. 65), and it may justly be con-

quired. The above is a dose for an adult; half the quantitative by given to children between seven and ten years of age, and at thing ye given spoonful, to children tunder three years. If it cause griping, as it occasionally dose, enemas containing sugar have been found effectual in reheaving it. Taking the dose above named as correct, the statement of Sir W. O'Shaughnessy (Birgal Dist p. 9 32) that he had prescribed the

CARICA The Papaya or Papaw. Papaya. MEDICINE. obvious effect, is fully explained. It is principally effectual in the ex-Juice useful in Lumbrici. Seeds. Useful as an Emmenagogue,

milky juice as an anthelmintic, in doses from 20 to 60 drops, without

that they assert that if a pregnant woman partake of them, even in moderate quantities, abortion will be the probable result. This popular belief is noticed in many of the reports received from India it is also stated that the milky juice of the plant is applied locally to the os uters with the view of inducing abortion (Pharm. Ind., pp. 97, 98)

The opinions so liberally contributed for this publication, by the Indian medical officers (see below), give so much of personal experience regarding the properties of this drug that it is scarcely necessary to abstract an account of it from the publications usually consulted. The following passages may, however, be found useful

A writer in the Ceylon Observer (30th July 1884) says . "Papain," papainum, or vegetable papsin, may be prepared from the juice of the green fruit of Carica Papaya by adding alcohol, which precipitates papain. This precipitate is dried and powdered and is then quite ready for use Brunton considers that, in its peptonising powers, it is superior to the ordinary animal pepsin, and it has the additional advantage of neither requiring the addition of an acid nor an alkali to convert the contents of the stomach into peptrand Germany, and has been

is an invaluable remedy in the

The author of Itablela ь P ('h d Mat Med)

Leaves 587

Papaya.

| fragrance | | | | | , | . : | | CHEMISTRY. |
|------------------|---------|-------------------|--------------|----------|---------|---------|---------|------------|
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| larger particles | and ev | lates 1 | inic granic | rus mas | 2 COLL | | e yel- | ſ |
| lowish bro | | | | | | | ies its | 1 |
| weight of | | | | | | | lean | |
| beef in or | | | | | | | Below | |
| the boiling po | | cal ie i into sei | veral pieces | s, and a | it the | close | of the | 1 |
| experiment it h | ad sep | arated into co | arse shreds | i Int | the co | ntrol 6 | xperi- | } |
| ments made wi | thout t | he juice the bo | uled meat 1 | was visi | ıbly ha | rder. | Hard | Į |
| boiled albumen, | diges | ted with a lit | tle mice a | t a tem | Derati | re of s | ო°C. | 1 |

hours at 15°C after a short boiling became perfectly tender, a similar piece wrapped in paper and heated in the same many the following are the co (1) The milky juice a apaya is (or comains) a terment which has an extraordinarily energetic action upon nitrogenous sub-

could after twenty-four hours be easily broken up with a glass rod 50 grammes of beef in one piece, enveloped in a leaf of C Papaya during 24

1278) The active principle has since been separated and given the name of Papaine, it is now an article of commerce in Europe for medie nal purposes and is said to be capable of digesting 200 times its weight of fibrine, it has been used as a solvent of diphtheritic false old standing cases of chronic he hands, and where other reapplication in the following ns of no dered been

uyspepsia, with great benefit, I had a the grounds of Bankura 1211 nd the milky juice collected 24 hours or so, a dull white preparation for internal use,

hard Some comparat .

CARICA Papaya. MEDICAL OPINIONS

The Papaya or Papaw.

uld be given to adults it quite tender and fit the case of invalids

I muture of the juice does not keep well and is disagrecable to taste. A syrup of the powder may be made if required for children and delicate women" (Surgeon R L Dutt, M D , Pubna) "The milk-like trice of the green or unrine fruit is a good digestive, and most efficacious in dyspepsia I have frequently prescribed it with marked success. The ripe fruit is alterative, and if eaten regularly every morning, corrects that habitual constipation so common in India. The dry fruit is said to reduce enlarged spleen, but I administered it in several cases without any apparent benefit The leaves are reputed to promote the secretion of milk I tried this, and the result was not unfavourable, but I think the good effect was chiefly owing to the maintenance of a uniform heat However, more experiments are necessary to decide the question. The leaves should be gently bruised and heated in a pan and applied warm to the breast. The dose of the milk like juice is 30 drops. mixed with water, two or three times a day The juice must be fresh, as it decomposes quickly, but it may be obtained by picking the green fruit on the tree and collecting the Civil Surgeon, Dumka,

I have seen spleen grow smaller in

young persons who have been treated with the dried and salted fruit. The juice called paparne has digestive ferment properties and will remove thickened skin, as in eczema and corns, It is also said to be a

meat, it dissol meat renders mild lavative ..

The Papaya or Papaw CARICA Papaya

properties, (P W B, Dacca) The juice has the power of dissolving OPINIONS

is said to bei "The juice lar character"

it beneficial" (Surgeon Roderick Macleod, Giya) , Introduced by me in the treatmen

ruary 1875, is very effect digestion, al

geon Major J M Zorab Balasor) 'The milky juice of the unripe fruit

unitipe fruit in effective remedy drachm three tit Provinces) resorted to by irritant and is

join comes, Esq., Medical Storeiternally it produces abortion' oproduce abortion Fruiteaten'), Salem' "The unripe fruit

made into a curry, is eaten by women to excite secretion of milk. It also has the property of making meat of any kind tender when cooked with it (Honorary Surgeon P Kinsley Checael, Ganjam Madras)

of n North dose 5 to

20 Janus 101 Uspepsia (Apolineary I Immas Wird, Madamapali), Cud dapah) "The peculiarities of this first a natis selects as a solvent of meat require to be scientifically investigated" (Surgeon General William Parameters). The jude is used externally a poul cochave an excellent

The inspissated juice of the

| CARICA Papaya. | The Papaya or Papaw. |
|---|---|
| MEDICAL OPINIONS. | |
| FOOD Rise Sout Source and Curries and pickles. Soo Ott prepar- ation 591 | other methods were used the matter is open to doubt" (Surgeon W. G. King, M. B., Madrai) "The leaves are used externally for nervous pains. The leaf may be either dipped in hot water or warmed over a fire and applied to the painful part" (Surgeon-Major W. Nolan, M. D., Bombay) "The seeds are considered to be anthemmix (Surgeon Major F. Robb, Alimedabad). The above opinions show how widely and uniformly the properties of the papaya are believed in by Native and even by European Medical Officers. Food—When ripe the fruit attains the size of a small melon, the interior is soft, yellow, and sweetish, eaten by all classes and esteemed innocent and wholesome When green it is cooked by the natives in their curries and also puckled. The ripe fruit has a flavour peculiar to itself, the better qualities are eaten without sugar, and by many as soon are expere and salt. The seeds have a pleasartly pungent taste, not unlike mustard, hence in all probability the dea occas onally alluded to that this is the mustard tree of the scriptures. Lisboa says the fruit has a sweetish toste and makes an excellent tart. When boiled in slices it is eaten as a vegetable. Don says that in South America the fruit after being boiled and mixed with lime juice and sigar is used in place of apple sauce. Sloane remarks that the univer fruit is cut into sinces and soaked in water till the milky juice is removed. It is then boiled and eaten as turnips or baked as apples. A few drops of the milky say of the papaw is said to render meat tender. The author of the first green. In Barbadoes the first of annuls is reported to be hung on the tree over right in order to soften it. This idea prevails all over India and is doubless often resorted to by domestic servants. Drury confirms this and states that he has personally tested the accuracy of the popular notion. |
| Tulan | due to accidental causes According to some writers the best plan to soften |

Julce, 592

pieces, and served with sweet oil, vinegar, salt and pepper, serves as a very palatable vegetable, and is very similar to squash in taste" (Mr. L. Lottard).

Strecture of the Wood —The stem of this fast-growing tree is too spong, and fibrous to be regarded as affording timber. Gamble describes it as soft wooded

meat is to wrap it overnight in the papaw leaves, or to drop a little of the fresh juice into the vessel in which the meat is being cooked Brandis

mentions another process, namely, to wash meat with water impregnated with the milky juice. It is even stated that meat is rendered tender by causing the animals to eat the seeds before they are killed. The best qualities of papers are said to be obtained from Singapore and Moulmain stock. "The green fruit, when peeled, bolled, cut into small.

TIMBER 593

> Domestic —The juice is used by freckles It is also exceedingly ac applied to the skin (Treasury of 2

DOMESTIC, 594

to the skin (Ireasury of 1) by the Negroes in washing linen as a substitute for soap (O Snaugn-nessy)

| The Blistering Papaya of Brazil | CARISSA Carandas |
|--|---------------------|
| Canca spinosa. A branching tree met with in Guiana and Brazil, has a much more acrd juice than the other species if dropped on the skin it cause disagreeable blisters. The fruit is not eaten, and its flowers have a cart | Juice. |

CARISSA, Linn , Gen Pl , II , 695

A genus of densely branched, spinous, erect shrubs, belonging to the APOCYNICE There are some twenty species African Asiatic, and Australian Sir J D Hooker remarks of the five Indian species that they are pro bably mere forms of one or two very variable plants axillary, pedun-

nthers included, Jeary 2 celled, 2 Otules 1 4 In tely attached to

the septum without a wing or pencil of hairs

Carissa Carandas, Linn , Fl Br Ind , III , 630 , Wight, Ic , f 426, APOCYNACÉÆ

506

Syn -C concests, Wight, Ic, t 1289, Bedd, Fl Sylv, Man, 156, Anal t 19, fig 6 Vern -Karaunda, karunda, or karonda, garinga karrona, timukhia,

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Botany, Firminger, Uan Gard, 256

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Habitat -A dichotomously branched bush, cultivated for its fruit in most parts of India, said to be wild in Oudh, Bengal, and South India

> 597 MEDICINE

used in the form of curry and chutney by the natives" (Assistant Sur geon Anund Chunder Mukerji, Noikhally). "Antiscorbutic, expector-

| wj////// 141 |
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| MEDICINE |
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| |
| FOOD |
| Pickle 600 |
| Preserves 60I |
| |

602 DOMESTIC

Fences. 603

CARISSA

Shinariim

The Karunda.

ant" (Surgeon W Barren, Bhuj, Cutch). "The juice is irritant and TL capable of producing i' ^

with food, and has, I 7 M. Zorab, Balasore

much used at the cor

P N Mukery, Cuttack, Orissi)

Food -The fruit is made into pickle just before it is ripe, and is also employed in tarts and puddings; for these purposes it is superior to any other Indian fruit (Firminger). When ripe it makes a very good jelly (equal to red current), for which it is cultivated in the gardens owned by Europeans The natives universally eat the fruit when ripe, and ex-

> nber of 0261

Carissa diffusa, Roxb, Fl Ind, Ed C B C, 231, Syn for C, spingrum. A. DC, which see

C. macrophylla, Wall, Fl Br Ind, III, 631. 601

> Syn - CARISSA LANCEOLATA, Dals , C DALZELLII, Bedd , Fl Sylv , Man . 157

References -Dals & Gibs , Bom Fl , 143 , Lisboa, U Pl of Bom , 166.

Habitat .- A large shrub with very strong, curved thorns, common on the Deccan peninsula, Coorg (Heyne), Konkan at Ramghat (Dileell); Courtailum (Wight) The flowers are much larger than those of the other species

Food -The fruit is eaten, it is about the size of a plum and ripens in May. Beddome says it is superior to that of C. Carandas.

C. spinarum, A DC, Fl Br Ind, III, 631, Wight, Ic, 1 427

Svn -C DIFFUSA, Roxb The Flora of British India regards this species as probably only a state of

v

Vera - Karaunda Hind , Gan, garinda, garna PB , San karunda, anka koli, URIYA, Karamadika, SANS, Wakoilu, TEL, Kanuman,

References -Rorb Fl Ind , Ed CBC, 23t Brandis, For Fl , 321 , Thwaites, Pl 116, od Bal-U Pl of

4011 . 166

Habitat -A small, thorny, evergreen shrub, wild in most parts of

thence northward to the mouth of the Hugh (C. diffusa).

C. 606

FOOD Fruit 605 606

The Camelian.

CARNELIAN

Medicine.-This plant is mentioned by Baden Powell amongst his

MEDICINE. Wood. 607

Food -The fruit is eaten in tarts. The leaves are greedily devoured by goats and sheep.

FOOD.
Fruit
608
FODDER.
600
TIMBER.
610
POMESTIC.
Fences.

Fuel 612

Domestic Uses. - Largely used for dry fences, but spreads so rapidly made there clearances have been made that it may impede the reproduction and growth of the forest. It coppies freely and makes excellent fuel.

1 -

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ιā,

CARMINE.

Carmine and Carminic Acid.

CARMIN, Fr.; KARMIN, Germ.; CARMINIO, IL.

References.—Balfour's Cyclopad; Ure's Dictionary of Arts, Manuf, and Mines.

A pigment of a bright red colour, made from cochineal and alumina or bchloride of in This is prepared by throwing into a decoction of cochineal a certain proportion of the base employed. A salt is produced which is allowed to precipitate in shallow basins. The colourless liquid is decanted and the powder carmine dried and preserved. By the old German process carmine is prepared with alum.

The uses of Carmine have recently been greatly extended. It is employed for making fine red inks and for silk-dyeing. It is the finest red the water-painter, and more especially the miniature painter, possesses The French carmine and rouge is preferred to the English. See Cochineal.

Carnation, See Clove.

CARNELIAN.

The Condition of the Chalcognose of the University of the Chalcognose of the Chalcognose

1st-Transparent Crystallised Quarts or Auhydrous Quarts, as represented by the Rock Crystalls. These, when voict, are known as the Amethyst, and when yellow or sherry-coloured as the Cairngorm, but numerous intermediate shades also exist from red to black.

and—Uncrystallised or Crypto-Crystalline Anhydrous Quarts—This corresponds to the Chaleedony series, but by most writers this is also made to include Jaseer, an opaque rock of undefined nature rather than a definite mineral. The term Acare is sometimes given generically to denominate this series, or Agate and Chaleedony are used as synony mous terms

3rd-Uncrystalline Semi-transparent to Opaque Hydrated Quarts -- The Oral may be given as the type of this group,

C. 614

біз

614

168

CARNELIAN.

The Carnelian.

QUARTZ.

The quartzose stones referrible to the above sections are extensively used in India for ornamental purposes, in the lapidaries' art, in decorative architecture, and in the manufacture of cheap jewellery. They are popularly assigned a position with the "inferior gems"—the diamond,

were apparently not known to the ancients, and when first brought to their attention obtained fabulous prices. Pllny mentions that fragments of a small Cambay cup were exhibited in the theatre of Nero, "as if." adds Pliny, "they had been the ashes of no less than Alexander the Great himself." Balfour remarks with much truth that "amongst the people of India the inferior g

for its intrinsic price, I in which the chief vali

so the trade in these

extensive than it is

to definitely express Indeed, the utmost that can be done in this direction, is to remind the reader of the elaborate decorations of the Taj

bay and Broach hold their own --carbuncles, carnelians, and agate factures in rock crystals, and Ja Rajputana and the Panjab hav industry in ornamental stones

of the foreign trade in certain o of the Indian lapidary indus

known under the generic name of ma-hu-ya

EXPORTS PROM INDIA OF INPERIOR GENS-Under the heading JADE STONE Burma is said to have exported, since the beginning of the present decade, the following quantities and values -

| | YEARS. | | | | | | | | | | Quantity. | Value, |
|---------|--------|---|---|---|---|---|----|-----|---|-----|-----------|-----------|
| | | | | | | | | | | | cwt | R |
| 1880-81 | | | | | | | | | | - 1 | 3,371 | 8,03,890 |
| 1891-82 | | | | | | | | | | ٠. | 7,788 | 23,01,800 |
| 1882-83 | | | | | | | | | | . ! | 4,150 | 9,00,900 |
| 1883-84 | | | | | | | | | | ٠. | 3,849 | 8,12 960 |
| 1884 85 | | | | | | | | | | | 3 738 | 5,60,050 |
| 1885 86 | ٠ | | | • | • | • | | • | | - 1 | 3 842 | 5,00,030 |
| 1836 87 | • | • | • | | • | • | • | • | • | • | 2,890 | 5,61,000 |
| | | | | | | | To | FÁL | | · | 29,637 | 64,40,650 |

Thus during the past seven years, British Burma has exported over half a million of pounds sterling worth of jade, an amount which has gone C. 615

PEPORTS 615

Exports of Inferior Gems.

C 441 -

CARNELIAN.

wood 7 64 per cent, cutch 2 56 per cent, and jade-stone 3 51 per cent. From the table given above it will be seen that the exports of jade during that year were exceptionally high, but it may safely be added that jade still holds a position as the fowth or fifth most important article of export from a burns, and that will not make the mobile given may in this future be considerably extended. The exceptional divelopment of the trade in 188182 was due to the discovery of a new mine and the decrease that followed accounted for by the jade thus sent into the market having proved much inferior to the stone usgally exported

An infenor quality of jade-stone is also found at Mirzapur, and a very considerable trans-frontier trade is done in the Panjab in Kara-kash jade from Turkistan, and in jade and imitations of jade or false jade from Kashmir, (See on a further page, under Agare, variety

plasma)

We have alluded to jade in the present connection, not from an established belief that it belongs to the quartrose group of minerals with which we are at present dealing, but because it is one of the so-called inferior gens. The chalcedony and rock crystal gens, however, are even as extensively employed in India as jade-stone, yet it has been found difficult to furnish definite data treatment ghe extension of the miternal and foreign trade in these Perhaps the most interesting of the early accounts of the Cambay tate and maturity in "Cambay stores" and

| | | | | | | | | R |
|--------|------|---------|------|------|------|----|--|--------|
| | 4 at | | - | | | | | 49,140 |
| 180 | S at | | | • | | | | 54,240 |
| Passin | g ov | er 70 y | ears | they | were | ın | | - |
| | | lued a | ŧ. | • | | | | 84,370 |
| 187 | 8 at | | | | | | | 50 970 |

during the first few years of the present century

170

CARNELIAN.

616

The Rock Crystal.

We must now describe, as briefly as possible, the principal quartzose inferior gems -

ret -ROCK CRYSTAL., Mallet, Maneralogy, 62.

Vern — Bilaur, Hind., Phatak, Gujrati, Tansala (smoky Cairagorm),
PB The Burmese name for an Amethyst signifies "egg plant, Sapphire" References —Balls Econ Geol, 502, Balfour, Cycl of India; Bomb Gas, VI, 201 Mason & Burma (1800), b 570, Colculta Jour hat Hist, II Madros Jour, Li and St., VII, 172 Mysore Got, I, 20; Central Prov Gas, 505, Oldham, Jour As Soc, Beng, XXIII, 271

CHARACTER or -When pure this mineral consists chiefly of silicic acid . it is an oxide of the carbon-silicon group the differently-coloured forms of rock-crystal owe their tints to the presence of small quantities of foreign minerals These coloured crystals are known by various names such as the Amethyst, Cairngorm, Rose-quartz, Pellucid-quartz, False-to-

paz or Citrine, Smoky-quartz, Milky-quartz, Prase, Aventurine-quartz, &c are. how-

ignorant account ed from nged reo a tinc-

ture of red sandal, it takes a deeper red tint, into tincture of saffron, a vellow, like the topaz, into a tincture of turnesol, a yellow like the topaz, into a mixture of tincture of turnesol and saffron it becomes an imitation of the emerald" Crystals coloured red are known in France as rubaces or false rubies.

PROVINCES WHERE MET WITH -Rock Crystals are very abundantly met with in South India, as, for example, at Vellum in Tanjore, in the Godavery basin, and at Hyderabad In the Bombav Presidency they are found at Tankara in Morvi Blocks from one to twenty pounds are found as clear as glass and capable of taking a high polish (rock crystals are also imported into Cambay from Ceylon and China) They are by no means uncommon at Sambalpur in the Central Provinces Agates and quartz in great ımahál hills in Bengal

Bannu, Sháhpur, and size have been found

d crystals as rubies large crystals are found in their country. Milky-quartz occurs in Mergut

stones, the value being about the same as garnets The crystals of Sambalpur are not worked and they have accordingly no local value. At the loot of the Delhi palace a number of vases, pitchers, drinking cups, &c, cut in transparent quartz were found. These are supposed to have been cut out of large crystals found at the Arvalı quartzites in the neighbourhood. The Shans of Upper Burma are said to be experts at making imitation gems from rock crystals.

C. 616

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The Agate.

CARNELIAN.

AGATE.

2nd -AGATE, Mallet, Mineralogy, 70

The name Agate is supposed to be derived from the achales (dydrus) runs in Sicil, or from ashk, a river, in Arabic Acate Fr, Achal, Genni, Akk, Arau, Jamin, Hind (agate), Chakmak (a find, shind, Alan, Hind (cut agries and beads brought from Kandahar), Asshar, Hind (Silica), Pathann, Hind (blood-store)

They are commonly known to Europeans as Cambay stones or Godavery pebbles

References — Hamilton, Copt (1987), New account of the East Indies, I 143, Hove, Dr (1987), Explorations in Bombay, Sel Rec Bomb Goot, VII, pp. 49655, Kenneley, Dr (1882), Trans Med & Phys Soc., Calc. III, 425 Wallace, Myor (1885), Sel Rec., Gort, Bomb, Victory, Cont.

SOURCES —Indian Agates are mainly obtained from the mines of Rewa Kantha in the Bombay Presidency, but they exist also in Bengal in the Rajmahál and Singbhum districts, in Hyderabad, and in the Central Provinces at Jabulpur

Jamo The colour varies, but is generally a greyish white Both kinds come from north east Kithuwafe, near Mahedpur in Morvi, three miles from Tankára Of the stones which lie in massive blocks near the surface, the most perfect do not exceed five pounds in weight, while those of inferior quality, in many cases cracked, weigh as much as sixty pounds. These stones are the other than Control.

Kotra, three miles from T. 17-

Kotra, three miles from two feet under the surf. a pound to forty pound

the common agate W on a base of crystals, s

dark green or red-brown moss

172

CARNELIAN.

The Agate.

AGATE

showing either a dark ground with white streaks, or dark veins on a light black ground."

CHEMACTER OF—Agates are concretionary masses or nodules, which occur usually in hollows or veins in volcame rocks. When cut across the sections show layers. "The colour markings are often in concentricings of varying forms and intensity, or in straight parallel layers or hands The colours are chiefly grey, white, yellow or brownish red." The composition of most of the forms of agate and carnelian is from 70 to 96 per cent of silica, with varying proportions of alumina, coloured by

by the more porous layers of the stone; it subsequently becomes carbonised, and thus the contrast of the various colours is heightened. The

clear greyish irious shades, es are found in m as found in

2 " Moss agates are such as contain arborisations or dendrites of oxide

blood drops

4 "Plasma, a grass-green stone, found engraved in runs at Rome, on

mployed d in the

ntions a ple-green

. .

chiefly by its zigzag pattern.

sword h . paper-ct . . - -

ing in marble and to a certain extent are so employed at Agra and
made Agates are also
book-binders, they are
t, as well as employed for

AGATE,

erial of which the murr-

seems to be of opinion that it was flourspar, but Ball very properly comments upon this opinion "if it was obtained at Ujein or Ouzein, or any other locality within the trappean area, it was almost certain to have been one of the chalcedonic minerals, give, carnclian or agate. Flour spar is not known to occur in the trap."

CARNELIAN 618

grd-CARNELIAN (from Caro-nis, flesh, in allusion to the colour),
Mallet, Mineralogy, 72.

CORNALINE, Fr , KARNEOL, Germ , CORNALINA, II

References -Ball, Econ Geol., 506 Balfour, Cycl., 1, 555 & 583, Encycl Brit 1, 177, Ure s Dict., Aris, &c., 1, 655, Baden Powell Pb Prod., 57 Copeland, Bomb Researches, Thomson, Mad Jour., Lit and Sei, V, 161

be consulted

CHARACTERS OF —Dana defines the carnelian as a reddish variety of chalcedony, generally of a clear bright tint, but it is sometimes of a yellow ish red

> Rátanes come rbadda, Burma.

Mergui, and abundantly so in Japan

ARTHECIAL COLONEINO OF AGATES INTO CARRELIANS—While collecting the pebbles the miners divide them into two primary classes those that are not improved in colour by butting, and those that are Of the former three are three-then varieties (1) the Onyx, known as mora or bawa ghori, (2) the Cat's-eye, cheshimady or dala, and (3) a yellow half clear pebble catled vori or lusinia. All other stones are baked to bring out their colour. "During the hot season, generally in March, and

CARNELIAN.

The Onyx and the Jasper.

CARNELIAN

010 010

JASPER. Ó20 carried to the Nerbadda and floated to Broach Here they are shipped in large vessels for Cambay, and are offered for sale to the Carnelian dealers.

"By exposure to the sun and fire, among browns the light shades brighten into white, and the darker deepen into chestnut. Of yellows, mane gains a rosy tint, orange is intensified into red, and an intermediate shade of yellow becomes pinkish purple. Peobles in which cloudy by clear bands of the palest light by the palest light properties.

id even red, free stone, the more rge, thick, even and variegated

stones are worth little"

USFS OF —Carnelians are extensively used for scals. Many of the antique gens are engraved on carnelian

4th-ONYX, Mallet, Mineralogy, 73

ONYX, ONICE, Fr , ONYX, Germ , ONIQUE, Sp

References —Balls Econ Geol 503, Mason's Burma, 581 B Heyne, Indian Tracts, \$2.05, Newbold, Jour Royal Asiatic Sec., \$1\times 37

The Only resembles the agate very closely, differing only in the fact

and such like articles

and such like atticles

5th-JASPER, Mallet, Mineralogy, 76

JASPE, Fr., JASPISS, Germ & Dutch, DIASPRO, It., JASCHMA, Russ

References -Mason's Burma, 581, Ball, Econ Geol , 503

present position issification. It is net occurs among found in Tenas-

serim A Cara - Journal III Ac

says I have

Traverson Mountains" Jasper is abundant in the transition rocks of Kadapah, ribbon pasper is said by Mr. Foote to be largely produced in the Sandur bills in Bellary Bright red pasper is also reported to be abundant in the transition rocks of the Narbada and Sone Valleys, Nodules of Jasper are also common in configuence to rock.

The Opal and the Cat's Eye

CARNELIAN

Uses or -Sometimes employed for seals

JASPER HELIETROPE

6th-OPAL, Mallet, Mineralogy, 80.

OPAL б21

OPALE Fr , OPAL, Germ , OPALO, It , Dhudia pathar, HIND Chalcedony and Opal are sometimes known as Gomed sannich, HIND

This is a compact uncrystalline semi transparent to opaque hydrated silica. When of milky white colour, opalescent, and exhibiting a rich play of colours, it is the Noble Opal When not opalescent it is the Common Oral The former are obtained chiefly from Hungary and ig come na, and

ore and

Sitabaldi

On being first dug out of the earth opal is said to be soft, and to harden and diminish in bulk on being exposed to the aimosphere.

7th-CAT S EYES, Mallet, Mineralogy, 69

CAT'S-EYES. 622

This stone is perhaps closely allied to Onyx, but by some writers it is placed nearer rock crystal It is a translucent quartz, presenting a pecuhar opalescent reflection, said to be due to the presence of asbestos It bears to the eye of a cat, an

I, their name for the stone. he stones are common and are found are not known "

Malahar Coast is generally accepted as a form of cat's eyes They are sent from Cambay to Bom han a to Dar

and Lussuma are names given to a much valued pebble, found scantily with cat's eyes in the Rajpipla mines of Bombay (Select Records, Bomb., New Series, No IV , 31)

LAPIDARIES' ART

It is not proposed to deal with this subject in the present article, it having been deemed desirable to give in one place under "Lapidary" an abstract of all that is known regarding this industry, not merely as practised with the inferior gems but with all gems and ornamental stones For convenience the reader may, however, he referred to the following works which deal more immediately with the cutting, &c, of the inferior gems -

Bom Gas, VI, 201. Hosy, Trade and Manuf of Northern India, pp sand 119 Baden Pouell, Ph Manuf, 192 kipling, Cat Cal Interu Exh. Ph Section, 28, Burma Admin. Rep, 183-83, \$ 64. Hendle Indian Art Journ , Part 2, 28

The above account of the inferior gems was in type before the writer received Mr. Mallets Vol IV of the "Manual of Geology of India"

CARPETS AND PHGS

Carnets

CATS EYES | 1

He has therefore been unable to do more than give references to Mr Mallet's account of these minerals, but the reader is referred to that work for fuller particulars

See "CARBUNGLE," "DLAMOND," "JADE," "GARNFT," "LAPIDARY,"
"PREGIOUS STONES," and RUBY"

"PRECIOUS STONES," and RUBY"

Carob tree. See Ceratoma Siliqua, Linn; Leguminos &

CAROXYLON, Thumb , Gen Pl , III., 71.

623 Caroxylon feetidum, Mog, Fl Br Ind, V, 18, CHENOPODIACEE

C. Griffithis, Mog . DC Prodr . AIII 2, 175

An Afghanistan plant, supposed by Stewart and several other writers to be the botanical name for the Sind and Panjal lane, from which Khar-staji is made. This is Haloxylon recurrum, Bunge, or the Salsola lana, Steels Fl Br Ind V, 15 See also under Camel Fodder 21, and Haloxylon recurrum Correct the mistake of Caroxylon Griffithi into Haloxylon recurrum BARILLA. B 163

Syn for Salsola FETIDA, Del , which see , also under CAMEL FODDER, 39

CARPESIUM, Linn . Gen Pl . II . 236

Carpesium abrotanoides, Linn, Fl Br Ind, III, 301, COMPOSITE

Syn —Carpesium racemosum Wall Vern —Woliangil, Kashnir, Hukmandas, Pb Reference —Baden Powell, Pb Pr. 357

Habitat —A stout herb met with abundantly in Kashmir, extending along the Himálaya to Sikkim, alhitude 5 000 to 10 000 feet. Some of the specimens so named by Wallich belong to Rhyochospermum verticillatum Reinie, a plant which extends to the Khasia Hills and Burma, descending to lover altitudes than Carpesium

DYE 625

medi-

CARPETS

626 Carpets and Rugs

Tapis, Fr, Teppiche, Germ, Tapyten, Dutch Tappeti It, Tapetes, alfondras, alcitifas Sp, Kowru, kilimi,

The term Carpet is probably connected with the Latin tapetes from whence tapestry

Vern — Dars (small rug), satranzi (large carpet) cotton, Adlin (large carpet), galicha or kilicha (small rug) woollen Hind, Ghalichah Pers, Janikalam Tau, James 10, Tel., Jemkhan (in Belgaum), Bone, Parmadan, Malan

Carpets.

CARPETS AND RUGS

References.—Birdwood, Memo, 29th Sept 1879, Indian Arts, 284, Vincent J. Robinson, Eastern Carpets, also Journ. Soc Art (1886), p. 447; Baden Powell, Manuf, and Arts, Panish, pp 10 25; Dr. Forbes Watson's Rep., Col. Datidson in Rep., Hyderabad Com-

It is not contemplated in the present article to do more than draw attention to the main facts regarding the Indian Carpet Industry, the object being more to indicate the nature of the carpets made, the materials of which they are were and the dyes employed in their coloration, than

there are carpets woven by the warp horzontal, and others in which its vertical. The former are chefly cotton carpets and the latter nearly always woollen, although it is frequent in both classes to use cotton or hemp for the warp and wool or hair for the woof. The warp, with the single exception of the so-called Jabbalpur dars, is not coloured, but the wool is so manupulated that in both thisse classes of carpets it covers the warp. The Jabbalpur dars are almost precisely of the same character as the Ridderminister or Scotch carpets—a certain proportion of the pattern being developed by the coloured warp which may be either in bands of different shades or of one uniform colour. In such carpets longitudinal or checked patterns are produced, whereas in the ordinary dars or cotton carpet the patterns run across the warp

Popularly the terms dari and satranji are applied synonymously to cotton carpets, but in more precise language, the former is a rug

vertical warp

The folloons average from the Dawles Complete (Vol. VIII con

rst, DARIS —" The cotton carpet loom which lies horizontally along the floor passes round stout poles at either end which are secured by ropes

daris. 627

The striped cotton carpet floom differs from the coarse cloth-floom only by

CARPETS AND RUGS

Carnets

CATS EYES

He has therefore been unable to do more than give references to Mr Mallet's account of these minerals, but the reader is referred to that work for fuller particulars

See "C'rrouncle," "Dlaviond," "Jade," "Garnft," "Lapidary,"
"Precious Stones" and Ruby "

Carob tree. See Ceratoma Siliqua, Linn; Leguminos E

CAROXYLON, Thumb , Gen Pl , III., 71.

Caroxylon foetidum, Moq, Fl Br Ind, V, 18, CHENOPODIACEE
Syn for Salsola Feetida, Del, which see, also under Camel Fodder, 39

C. Griffithii, Moq , DC Prodr , XIII , 2 175

recurrum in BARILLA, B 163

CARPESIUM, Linn , Gen Pl , II , 336

Cat | Carpesium abrotanoides, Linn, Fl Br Ind, III, 301, Composite

Syn — Carpesium racemosum Wall

Vern -- Wottangil, Kashufa, Hukmandus, PB Reference -- Baden Powell Pb Pr. 357

Habitat—A stoot herb met with abundantly in Kashin r, extend ng along the Himfilaya to Sikkim alutude 5 000 to 10 000 feet. Some of the specimens so named by Wallich belong to Rhynchospermum verticiliatum Rennu, a plant which extends to the Khasia Hulls and Burma descending to lower allutudes than Carpenium

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are quite ut known to the it is people

CARPETS.

626 Carpets and Rugs

Tapis Ir , Teppiche Germ , Tapyten Dutch Tappeti II , Tapetes alfombras, alcitifas Sp , Kowru, kilimi,

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Carpets.

CARPETS AND RUGS.

References.—Birdwood, Memo, 20th Sept 1879. Indian Arts, 284, Unicent J. Robinson, Eastern Carpets, also Journ Soc Art (1885), p. 437, Baden Powell, Manuf and Arts, Panylds, pp 10 & 25; Dr. Forbes Watson's Rep. Col. Davidson in Rep., Hyderabad Com-

It is not contemplated in the present article to do more than draw attention to the main facts regarding the Indian Carpet Industry, the object being more to indicate the nature of the carpets made, the materials of which they are woven and the dyes employed in their coloration, than to treat of the historic and artistic features of the manufactured articles Indian carpets may be classified either according to the nature of the materials of which they are made or the manner in which they are woven. There are cotton, woollen, silk, goat s-hair, yak's hair, and pashm carpets, or mixed carpets of any two or more of these materials. Then again, there are carpets woven by the warp horizontal, and others in which it is vertical. The former are chiefly cotton carpets and the latter nearly always woollen, although it is frequent in both classes to use cotton or hemp for the warp and wool or hair for the woof. The warp, with the single exception of the so-called Jabbalpur dari, is not coloured, but the would is so manipulated that in both these classes of carnets it covers the warn The Jabbalpur daris are almost precisely of the same character as the Kidderminister or Scotch carpets-a certain proportion of the pattern being developed by the coloured warp which may be either in bands of different shades or of one uniform colour. In such carpets longitudinal or checked patterns are produced, whereas in the ordinary darf or cotton carpet the patterns run across the warp.

Popularly the terms dari and sairanji are applied synonymously to cotton carpets, but in more precise language, the former is a rug or small cotton carpet and the latter a large one. Daris (=dar, a door, daris = 0.00 m.)

and any pleak of dars for all cotton carpets and carpets for woollen carpets, but more particularly pile carpets or those woven on a vertical warp

The following extracts from the Rombay Gasetteev (Vol. VIII express clearly

same time they variations, throi

111, Danis — "The cotton carpet loom which lies horizontally along the floor passes round stout poles at either end which are secured by ropes tied to strong wooden pegs driven into the ground The weavers crough on a broad wooden plank placed across the warp This plank rests on stones at the side of the loom, and as the work goes on is moved forward. The deep referred the company of the plank rests on the strong three planks are the strong three planks.

Persian carpets—by trands of the warp, being cut off, these e instrument called

which forms the colouring of the carpet The loom has only two heddes. The striped cotton carpet loom differs from the coarse cloth loom only by

DARIS 627

CARPETS AND RUGS

Carpets

DARIS,

being broader and having a stronger reed or phani. The chief a m of the carpet-weaver is to hide completely the white warp-yarn, leaving

the well yarn home thus using a greater length of well yath than the breadth of the carpet

"A cotton carpet costs from 31d to 71d (21 annas to 5 annas) a square foot

square 100t
Mr Ba shuttle and
with it the issage of the
woof the w by placing

a long pole, supported at either whole width of the warp. The means mare, and so called fro

from the gort are hung two of threads, which are attached to the under and upper threads of the web respectively. When it is desired to cross the threads of the warp, it is simply necessity to pull up one of the hamboos and lower the other as the bamboos are merely hung to the gort by ropes at each end, the raising and lowering is saidly done by tightening or loosening the surpending string by means of a suck attached. No regular shuttle is used A number of workmen sit in a row, on that part of the durries (411) which has already been completed, and pass the thread along between the lines of the warp, from hand to hand. The thread is wound in a long egg shape on an iron skewer or needle

and so on, the threads as they are passed through the threads of the warp are kept close together and the work is rendered compact and

Woollen daris are, however, also made in many parts of India, as in the Panjab and Bombay Those woven by the aboriginal races are small in size; the kin texture, and even painfully uneven in quality but

PILE CARPETS. Carpets.

CARPETS AND RUGS.

the fact that in India they are often spoken of as Persian carpets, - Indian carpets "Carpet-makall the parts of the loom, seems is almost entirely in the hands

PILE CARPETS.

"Persian carpet-looms differ from plain carpet-looms in having the warp fastened vertically, instead of horizontally, in the absence of heddles and treddles, and in the absence of the reed phans The loom consists of two uprights, from fifteen to twenty feet high and from ten to fifteen feet apart, supporting two beams, one fixed to the lower ends of the uprights and the other moveable. The warp-yarn is passed round these beams forming a horse passed as the second of the seco forming a horambon Ja- 11 a frame three to

a sketch

out to th

**- K -1 -~

that have to be taken up for the first row. The workmen repeat in chorus what the overseer says, and fix up the loops, tie a knot, and cut the pieces off As soon as the first row is ready, a west-yarn is passed between the two sets of the warp, and is fixed tightly in its place by the aid of a fork like instrument called the heckle. In this manner row after row is laid up, till the whole of the carpet is woven, when it is taken down from the loom, spread on the floor, and sheared.

"Persian carpets vary in price, according to texture and design, from 14s to £1-8s (R7-R14) the superficial square yard There are (1882) seventy five Persian carpet weavers" (Bomb, Gas . XIII . District 401)

PRISENT POSITION AND FUTURE PROSPECTS OF THE INDIAN PILE CARPET INDUSTRY.

cotton threads, which are soft in texture and not made hard and tight by over-twisting and sizing On these wool thread is tied and the allowance of wool is very liberal The looms are large enough to make any size of carpet, and there are, therefore, no seams For ordinary English Ten cafta de a dere is very frequently an unde on the back or front of the mess to the fabric this ' htly woven, a long needle bold drawal of the knife with

whic The demand for cheap

cuts away. In an Indian carpet, the whole fabric sinks together under the foot

"Moreover, very few of the English Jacquered power looms are more than three-quarters of a yard wide Hence the necessity for seams, which are the first places to wear thread bare.

"So it may be said that it is more economical, when buying a carpet, to give three or four times the English price for an Indian hand woven fabric. It is not, of course, contended that bad Indian carpets are



Carpets

CARPETS AND RUGS.

ments of chemical laboratories with their processes introduced, and such a system of organised work set up as completely transformed not only the trade but actually the carpets themselves which were the foundation of



Panjab was known beyond its border for the production of carpets, and then only by the productions of the Lahore pail executed for a London firm. There exist no specimens to show that the Multan industry, the

Vincent Robinson's address to the Society of Arts, he is reported to have said—'At one time I attributed this degeneration almost exclusively to the influence of the Government Schools of Art and the jails but at present I feel that it is chertly due to the influence of English commerce on the historical handicrafts of India." This seems a much more likely

to as follows in the Gasetteer for Campay -

"Cambay carpets had once a great name Among the articles mentioned in the proclamation of 1630 for restraining the excess of private trade to the East Indies," are rich carpets of Cambay Tater on a chief part of the Senior Factor's duty at Cambay was to buy carpets "ay carpets are spoken this trade has greatly paying the Nawab a

pile carpet trade has

Prile carpets are made of cotton at Hyderabad and at many other places, tuits of cotton yarn being used in place of wool. In the same way expenses to the carpets are mode of the beautiful to the control of the carpets are mode of the carpets.

higher prices than the others'

Pile Carpets are MADE at a limited number of Jalls in each Presidency and Province and by a few private manufacturers scattered here and there over the country. The references given to the Gazetteers convey some idea of the distribution of the industry, but it may be concluded that

CART AND CARRIAGE BILLDING. Woods used for

| _ | _ |
|---|-----|
| | D17 |
| | |

**

abad and Benares are best known

"Сотток," ised in carpet

cinds of carpets, cotton and woollen, are made can be obtained from the authorities of the Indian Museum in Calcusta

629

CARPINUS, Linn , Gen Pl , III , 405

Carpinus faginea, Lindl.; DC Prodr, XVI, 2, 127, CUPULIFERE.

Vern - Shirásh, imar, bijavwi PB Gish, N W P References - Brandis, For Fl., 492, Gamble, Man Timb, 390

Habitat —A moderate sized tree of the Himálaya, from Kumaon (and Nepal') eastward altitude 4 000 to 7,000 feet
Structure of the Wood —Similar to the next species

TIMBER 630 631

C. viminea, Wall, DC Prodr, XVI. 2, 127

Indian Hornseam

Vern -- Charkhri, kás, PB, Pumne, gorsa, chamkharak, N W P, Chukisss,

References —Brandis For Fl ,492; Kurs , Fot Fl Burm ,477, Gamble,
Man Timb 390 Slewart, Pb Pl ,200, Baden Ponell, Pb Pr ,572,
Ballour, Cyclob

Habitat —A moderate-sized tree of the Himálaya, from the Ravi eistward, from 5 000 to 7,000 feet frequent near water. Also met with in the Martaban Hills, altitude 5,000 to 6,000 feet, and according to Brandls, on the Khasia Hills.

Structure of the Wood—White, shining, no heartwood, warps in seasoning Weight 50b per cube foot, growth moderately slow The stem is irregular in section, like that of the European Hornbeam, which it much resembles both in bark, wood, and general appearance Cleghorn states that it is much esteemed by carpenters

Carrot. See Daucus Carota, Linn , UMBELLIFERE

632

CART AND CARRIAGE BUILDING-Woods used for-

During the Colonial and Indian Exhibition two conferences were held to examine the timbers shown in the Imperial Indian Section Mr. Hooper, the well-known London Coach Builder, remarked "That a wood was much wanted in the case against deep the land of the case against the case

hot dry weather of the north seasoned the wood in a way very much superior to the artificial methods employed in Europe." The following are the timbers used in India for these purposes, more especially those marked? —

MOOD USED FOR CART AND CARRI-E AGE BUILD-ING

maracu - Acacia ferruginea (carts)
A melanoxylon (coaches, railway Albizzia amara (carts) [carnages)
Barningtonia acutangula (carts)
B racemosa (carts)

B racemosa (carts)
Bassia longulola (carts)
Berrya Ammonilla (carts)
Bredelia montana (carts)
B retusa (carts)
Calamus Rotang (carriages)

Careya arborea (carriages)
Careya arborea (carts).
Cassia Fishia (carts)
Chloroxylon Swietenia (carts)
Cynometra ramiflora (carts)

*Dalbergia latifolia (wheels, gun carriages)
*D Sissoo (felloes naves, carts).

Diospyros melanoxylon (carriage Eugenia Jambolana (carts). [shafts) Ficus bengalensis (cart yokes) Gmelina arborea (carriages, palan-

*Hentiera littoralis (buggy shafts)
Hymenodictyon excelsum (palanquins)

*Lagerstræmia Flos Reginæ (carts, gun-carriages)

*Lagerstræma parnflora (buggy Mela Azadirachta (carts) [shatts) Michelia Champaca (carriages).

Miliusa velutina (carts)
Mimusops Elengi (carts)
Prosopis spicagera (carts)
*Pterocarpus indicus (carts, gunP. Marsupium (carts) [carriages)
Pterospermum subertifolium (carts)

P. Marsupium (carts) [carriages)
Pterospermum suberifolium (carts)
Sandoncum indicum (carts)
Sapindus emarginatus (carts).
Schieichera trijuga.
Shorea robusta

Strychnos Nux-vomica.

S potatorum Tectona grandis (railway

Terminalia Arjuna. (riages)
T belerica

T Chebula.

T tomentosa Thespesia populnea (carts and car-

riages)
Ulmus integrifolia (carts).
Vitex altissima (carts)
Xylia dolabriformis (carts).
Zizvphus zylopyra (carts).

CARTHAMUS, Linn , Gen Pl , II , 483

Carthamus oxyacantha, Bieb, Fl. Br Ind, III 386, Composite
Vern -Kantiari kandiára, poli, kháresa karar, poliyan Ps

References — Stewart Ph Pl, 123, Antchison Cat, Ph Pl, 80, Baden Powell, Ph Pr, 336, Cooke, Oils and Oilseeds, 34, Balfour, Cyclop Habitat — Wild in the North-West Provinces and the Panjah, most

Habitat -- Wild in the North-West Provinces and the Panjah, most common in the more and tracts. Mr O B Clarke thinks this may be the wild form of Saffower

Oil —Dr Stewart says that near Pesháwar and elsewhere in the Panjáb, an oil is extracted from the seeds which is used for illuminating purposes, as well as for food Dr Stocks probably alludes to this when

634

633

C. tinctorius, Linn , Fl Br. Ind , III , 386

The Safflower, Wildor Bastard Saffron, African Saffron, American Saffron, Carthamine Dye, Eng., Cartame, Safran datard, Fr., Der Safflor, Fakberdistel, Falsche

C. 633

MEDICINE 635 F000 636 637

CARTHAMUS tinctorius.

The Safflower.

SAFRAN, Germ.; ZAFFRONE, CARTAMO, II. & Sp.; POLERROI, Russ.

(sed), a-uvat husambi), susumba, RAN; ssecoo, su, asua, suyan, suoan, BURN Qurtum qirlum, usfar, RASB, Kashirah, munofir, kasakdanah, PERS Kusumbah, kamalottara, kashumbah, SANS, Kurtun, EGYPT. The

κνήκος, κνίκος of the Greeks
In Sind the seeds are called Kardai (kurtum), and in Panjáb Khar, polian
References—Port E7 Ind E4 CRC to Stemart, Ph. Pl. 199

the origin of this plant. It has never been found in a wild state, but botanists assign to it an origin in India, Africa, or Abyssinia, De Candille (Origin, Cult. Pl) says that the grave-cloths found on Egyptian mummers are dyed with carthamine. The Chineserectived the plant only in the second century B C, when Ohang-ken brought it back from Bactrana. The Greeks and Latins were probably not acquainted with it, although Birdwood and other writers give wrijong as its Greek name. As

CULTIVATION 638 vated in India.

CULTIVATION.

11 1

- - 1-3 - - 46

A few years ago Safflower was an exceedingly important substance, but recently the aniline colours have driven it almost entirely out of the European market. "It still, however, holds its place with the natures as a brilliant though exanescent dye, and as they employ it largely for home use, it must still rank among the industries of the country, as "(E. James) incount of the country in exceunt of the country in the cou

source of oil,

The Safflower.

CARTHAMUS tınctorius.

chiefly grown as subsidiary to some other crop, participating, therefore, CULTIVATION. in the treatment given to its associate. On this account it is extremely difficult to obtain trustworthy details as to the area under safflower, the method and cost of cultivation, nature of soil necessary, or value of the

стор. (a) In Bengal it is chiefly grown in the Eastern division, where even still it constitutes a crop of some considerable value, although greatly decreased through the introduction of aniline dyes. In fact, the Indian safflower Sown Oct. to Dec.

BENGAL. 639

riod of sowing r. for example. are, as a rule, been left fal-· - orted the the ires. ture, hree

cul-

Dathered farch to May.

even till May. In removing the florets, the flower-heads are not much injured, and as they are fecundated before the time of removal, the seeds continue to mature within their small, white, angular, one-seeded fruits. and are tipe in April to May. They are then collected for the oil crop (Agri-Hort Soc. Fourn , VII , 191)

Area.

under this crop in Bengal, but the following figures are quoted from Dr. McOann's work (which is taken from the official returns sent to the Economic Museum): Dacca, 11,500 acres; Gya, 2,260 acres; Monghir,

N.-W. P. AND OUDH. 640

tinctorius

| CULTIVATION Sown Oct to Nov | 38 per cent is irrigated land. The mode of cultivation is very similar to what has already been described for Bengal. Light soils are preferred, the plant is rarely grown alone, but is generally sown in the gram fields and disposed like rape in lines. It is extensively grown along with carrots near wells, participating in the rich cultivation bestowed on the latter. It is also associated with cotton, wheat or barley. In the North-West, |
|--|--|
| | 1 |
| Price | attnities of which have not been ascertained (Untilize and Fuller) In a report on the dyes and processes of dyeing in Ajmi it is stated that about 20 000 maunds of safflower are annually received from Delhi, the |
| BOMBAY. 641 | ` |
| | grain &c., to which last the cun vator looks for his profits. Probably |
| Area | |
| Sown Oct gathered March | . · |
| Production | 1 50 |
| Varieties Sadhi 642 Kusambyachi, 643 | chiefly for its oil-seeds kniumbyáchi a slenderer plant grown for its dye yielding flowers (Bomb Gas XII, 164) In Gujarát the * kabra or sol The land is ploughed. The seed is thrown broad geaped in February The |
| PANJAB 044 | nited : sown |
| CENTRAL PROVINCES 645 | during the settlement, 288 acres under the crop and in Hoshiarput 6,722 acres, especially in the northern part of the Garbhanker Tahiri It is generally grown as a musted crop in lines with gram and requires a sandy soil It is soon in September (a) In the Central Provincer, a little over 6 000 acres are annually under this rabs crop and Raipur is stated to export the dye stuff to about Rtopoo a pear |
| Area. | The before or considered the safflower of Bengal, the safflower of Beng |

| The Safflower. | tinctorius. |
|--|---------------------------------------|
| (f) In Berar, safflower, however, appears to be cultivated to a v considerable extent. Mr. Liotard informs us that the area under over 40 obvious | ery CULTIVA- TION BERAR, 646 |
| cate a is not seems t of the | • |
| only in small patches, and there is no export trade. | MYSORE. 647 BURMA. 648 |
| | |
| besides, Burma, instead of exporting safflower, receives annually a st | varieties. |
| | |
| | Spiny Porm. 049 |
| the Deccan alluded to above. (b) Almost spineless form This is known as bhinil in Patna, be in Berar, murilia (or shaved) in Azamghar and the husumbyéchi in Deccan A superior quality of dye is derived from this form. | d-ki Spineless the Form 050 |
| Provide from Provident Association | .' ' : |
| Bengal as from R3 to R15 a bigha. | ł |
| PRESENT POSITION OF THE SAPPLOWER INDUSTRY. Simmends in his Tropical Agraculture says: "The cultivature sallower, known as Costumban in Bengal, is receiving attention or hands of the local Government. The prosperity of liengil, they mainly depends upon the jute trade, is in some measure attention, the demand for safflower." The writer proceeds to state that the of the exports from Dacca alone "would be from nine to the form of the same of the sam | 1. 163° |
| tendang." in Bengal, a Simmonds from all Indi they were F | <u>ii</u> |
| established « | |

The Safflower

TRADE

ing" The total exports for 1886 87 were only R83 819 The following table gives the exports from Ind a for the past fourteen years —

| Exports | | | |
|---|--|--|--|
| | SAFFL | OWER | |
| \ EAR | Quantity | Value | |
| | Mds | R | |
| 1873 74 1874-75 1875 76 1875 77 1877 78 1876-77 1877 79 1879-80 1878 79 1879-80 1830-81 183 82 1831-84 1831-85 1834-85 1835-86 | 13 206 14 222 4 080 7,662 3 698 4 977 2 411 6 675 2 293 3 008 2 333 2 167 1 898 2 149 | 7 58 906 6 59,827 1,63 528 3 04 672 1,49 806 1 86 711 1 3 ,456 3 51 157 92 938 64 497 83 083 68 991 83 819 | |

report in June 1883 that "there is no land under safflower cultivation in

DYE 652 Preparation

THE DYL

superior to another—a fact accountable for either by the more favourable nature of the soil or the care bestowed in cultivation. If intended for export, after having been dired as above, the florets are e ther placed in a bag or on a basket or other contrivance permitting of the easy escape of a supply of water which is kept poured on them while beaten trodden on. This process is continued until the water passes through quite

Yellow 653 Red 654

Turmeric.

C. 660

| | RTHAMUS nctorius. |
|---|--|
| - vater (if clean) is re- of mud or other im- l colouring matter is care must be taken | DYE, |
| carefully dried, they are ready for the market. The Geneticer for the district of Karmal in the Panjáb describes the | "Stripped Safflower." 655 |
| delay in the preparation injures the dye." This process is so very defec- | Reason of lower price paid for Punjab Safflower. Originally grown for yellow dye. |
| | Adulteration 656 |
| to the continuance of even the present greatly reduced trade. The | Cowdung. 657 Rice flour. 658 |

water, it is employed by fraudulent dealers in the adulteration of shag tobacco" (Morton's Cycl, Agrs)

The Safflower.

DYE.
Estimation of Quality.
661

The quality of safflower cake is estimated by dyeing a known weight of cotton; about 4 ounces of safflower will dye 1h of cotton loth light pink; 8 ounces will dye it full rose-pink; and from 12 ounces to 1h will dye it a full crimson In order to take up this quantity, the cotton must be several tumes dwet in fresh solutions of the colouring matter.

Chemical History.—It is scarcely necessary to go into great detail re-

Two yellows and one red.

Capthamin

36 per cent. of the florets, while from 0.3 to 0.6 per cent. is the usual amount of Carthamin. The proportion of Carthamin present varies, however, in the inverse ratio to the amount of the soluble yellow principle. The second yellow colour is couble only in an alkaline ligiour.

If the dyc-stuff, after the removal of the soluble yellow principle, be acidulated with acetic acid, filtered, and first acetate of lead and next ammonia added, the second yellow colour will be precipitated along with

of the florets). In India pearl-ash is most frequently used, especially that prepared by incinerating bayra (Peacullana spicata) or of chir chira (Achyranthes aspera), (impure potassium carbonates), but the natural earth carbonate of soda or sayi-máti is also frequently employed for this purpose.

OLUTIONS.

EUROPFAN DYE SOLUTIONS.

Preparation of Dye Solution and European Methods of Dyeing with

pletely alters the colouring matter.

The Safflower

CARTHAMUS functorius.

"Carthamin in a pasty state, as obtained by the process just described, is met with in commerce suspended in water for direct use. The paste is dired upon suitable vessels—porcelain saucers, plates, or even upon polished cardboard.

DYE.

lowing passage may prove useful to Indian dyers or persons interested in the safflower industry "Carthamus from which the yellow matter has been extracted and whose I must be a been backen do not a finish to be not been backen do not a finish to be not been as the notation of the notat

in ca cherr

the long

and passed through fresh baths, continuing to wash and dry it between each operation, till it has acquired the depth of colour that is desired. When it has reached the proper point, a brightening is given it by turning round the sticks seven or eight times in a bath of hot water, to what about half a pint of Jemon-juice for each pailful of water has been added

When silk is to be dyed poneau or poppy-colour, it must be previously bould as for white, it must then receive a slight foundation of arnatio. The silk should not be alumed The nacaratr and the deep cherry-colour are giver precisely like the poneaux, only they receive no arnatio ground, and baths may be employed which have served for the poneaux, one is to complete their exhaustion. Fresh baths are not made

"The lightest of all these shades, which is an extremely delicate fleshcolour, requires a little soap to be put into the bath. This soap lightens the colour, and prevents it from taking too speedily and becoming uneven. The silk is then washed, and a little, brightening is given it in a both which have served for the dearse class.

a bath which has served for the deeper coloures

All these baths are employed the moment they are made, or as

"All these baths are employed the moment they are made, or as

peedily as possible, because they lose much of their colour upon keeping,

by which they are even entirely destroyed at the end of a certain time.

They are, moreover, used cold, to prevent the colour from being riquired. It

| - ,- | . , , |
|---------------------------------|--|
| CARTHAMU tinctorius. | |
| DEY. | must have been remarked, in the experiments just described, that caustic alkalis attack the extremely delicate colour of carthamus, making it pass to ycllow. This is the reason why crystals of soda are preferred to other alkaline matters "In order to diminish the expense of carthamus, it is the practice in preparing the deeper shades to mingle with the first and the second bath about one-fith of the bath of archil" (Ure's Dict of Arts, Man, and Mines, Vol. 1., 661). |
| indian dye solutions. 664 | INDIAN DYE SOLUTIONS. Indian Method of dyeing with Saffiower.—As already stated, the |
| | appear to be known to the natives of India. The dye stuff, after the |
| | • |
| | |
| | the tamannd is employed in place of lime-juice. In Manipur the fruits of Garcina pedinculata are viewed as superior to lime-juice, and have |
| Combinations 665 | the state of section of the colour large float are |
| | w w |
| | |
| | |
| | |

The Saffower

CARTHAMUS tinctorius.

N W P) With Terminalia Chebula or T. citrina and protosulphate of 1001, safflower gives a dark neutral tint, with safflower, sappanwood, and alum a purplish brown, and with indigoand safflower, greens and purples

(McCann, Des and Tans of Beng)
An almost indefinite series of colours are obtained in India by various combinations with safflower. It should be carefully observed, however.

Use of acids and alkalis.

tatter case act employed alo precipitating *

fabrics, alkali condition can peculiarity be

accurate account of the indigenous modes of dyeing with safflower
Fixing Safflower Dye.—It is much to be regretted that no one has as

FIXING 668

series and the series and the series and the decoloration of saffine rate as yet discovered a mode of preventing the decoloration of saffine rate, its fleeting property appears to depend on the ovidation of the particles of carthanna held mechanically in the fabric. The inhabitants of different parts of India boast of possess ga secret of effecting this purpose and careful observation on the part of local officers may help to three some light on the subject of the part of local officers may help to three some light on the subject of the saff of the subject of the saff of the

 the property extensive use justifies this

us that the dyers of Chittagong district claim to be able to produce a "semi-pena nent" safflower dye. This is done by adding safflower to water in which

actually made use of now and then as a discharge, so as to produce a yellow pattern upon a pink ground, weak acids do not affect the colours, but chlorne and sulphurous acid destroy the colour at once" (Crooket) Safflower dyed fabrics should not be washed with soap, as the colour is removed by the ilkali of the soap

Rouge — It is necessary to refer here very briefly to an important purpose for which safflower is employed, ris, the manufacture of rouge ROUG **669**

| 192 | Dictionary of the Economic |
|---------------------------------|--|
| CARTHAM! | |
| DEY. | must have been remarked, in the experiments just described, that caustic alkalis attack the extremely delicate colour of carthamus, making it pass to yellow. This is the reason why crystals of soda are preferred to other alkaline matters "In order to diminish the expense of carthamus, it is the practice in preparing the deeper shades to mingle with the first and the second bath about one-fifth of the bath of archit" (Ure's Dict. of Arts, Man., and Mints, Vol. 1, 661). |
| indian dye solutions. 664 | INDIAN DYE SOLUTIONS. Indian Method of dyeing with Safflower.—As already stated, the |
| | appear to be known to the natives of India. The dye stuff, after the |
| | , , |
| | |
| | |

the tamarınd is employed in place of lime-juice. In Manipur the fruits of Garcinia pedunculata are viewed as superior to lime juice, and have

Combinations.

| | The Safflower. | | | CARTHAMI tinctorius | |
|----------|----------------|------------|-----------------------|------------------------|---------|
| N1V. P.) | With | Terminalia | Chebula or T. citrina | and protosulphate of | DYE. |
| | | | • | | 1 1. |

Use of acids and alkalis. 666

employed along with the alkaline die solution may have the power of

peculiarity be fully appreciated, otherwise the observer cannot give an

667 FIXING 668

of preventing this oxidisation of carthamin. The fruit of Garcinia pedunculata, a common tree in Assam, has already been alluded to

Rouge.—It is necessary to refer here very briefly to an important purpose for which safflower is employed, vis, the manufacture of rouge o

ROUGE.

The Safflower.

tinctorius

01L 670 vigitale. This trade is unaffected by the antine imitations of safflower, and constitutes an article of considerable importance. The dry carthamine precipitate is sometimes called India or China lake, and this mixed with finely pulverised talc constitutes rouge vigetale. (See Carmine; also Carnellan—the coloration of inferior gems)

THE OIL

There are two kinds of seeds, or, to be more accurate, of fruits-one

. .

account of the little heat which it gives out (Baden Powell) It is used locally for culturary purposes, and is said to form an ingredient of the

Prices.

"In Bulandshahr the safflower yields about y maunds of seed per local highs The oli-clace is supposed to be the perquisite of the oil-presser in lieu of wages A maund of seed yields 7 seers of oil, at seers of oil-cake, and 19 seers of busk or bhuse, and the oil-collest at from 4 cos seers for the rupee, the cake at 30 seers, and the bhuse at 4 maunds" (E. 7 Minnson).

"The pure oil is seldom offered for sale. Though it lowers the quality of the oil, the outturn is generally increased by mixing its seeds with gingelly seed" (Bomb Gas, 153) Although the oil is apparently not exported from India a considerable trade is done with Liverpool and Landon in the seeds

EXPRESSION Dry cold 671 Expression of Oil,—"The oil is expressed in the same manner as the

Dry Hot. 672

Dry Hot extraction of Oil —"There is also another way of extracting the oil which is, I think, so peculiar that I will attempt to describe it. It

ch is, I think, so peculiar that I will attempt to describe it. It is, in fact, but this sing his well ropes, used for exposure A hole is dug in the

jar or gurrah of any captuty, hen plate with a hole of about a centre. Above this is placed bhurra or kussum seed invertthree is luted with city, and

Process of extracting the oil after the Dry Hot method.

blurra or kussum seed inverte three is luted with clay, and

the is kept in ignition for about half an indust, when it is removed. The

The Safflower.

ARTHAMUS tinctorius

upper inverted vessel is found to be about half full of the charred seed, and the lower one, which was imbedded in the ground about one third full of a black sticky oil B

ntf.

charred, but the natives assert servation of leathern sessels e

worth the while of chemists this kind of oil would be of any commercial value at home. The yield of oil by this process is more than a fourth larger than by the press" (R W Bingham Four Agri Hort Soc. All , 340)

THE MEDICINE.

MEDICINE.

"This plant is the kusumbhu of Sanskrit writers, who describe the seeds as purgative, and mention a medicated oil which is prepared

DII 673

A tixed on is prepared from it which the Vytians used as an external ulcers.

which nto an of the

dried PLOWERS taken internally cures joundice (Hort Jamaica, 1, 72) Loureiro says that the SEFD's are considered as purgative, or eccoprotic, resolvent and emmenagogue. In South America as well as in Jamaica, the flowers are much used for colouring broths and ragouts Hin Rombo he sade adar the name II J

Flowers. 674 Seeds 675

resemble in colour, but from which they may be distinguished by their tubular form, and the yellowish style and filaments which they enclose In large doses carthamus is said to be lavative, and administered in warm infus on, diaphoretic It is used in domestic practice as a substi tute for saffron in measles, scarlatina and other exanthematous diseases to promote the eruption. An infusion made in the proportion of two drachms to a pint of bo ling water is usually employed, and given without restriction as to quantity (U.S. Dispens) 11 011 677

De or o a organistic. He steas are laxable The Oil 15 used as a dressing for ulcers' (Surgeon W Barren, Bhuj, Cutch) Food -- Poultry fatten on the send Ann Ath - -

678 non

| CARUM Carui. | The Caraway. |
|-------------------|--|
| | CARUM, Linn.; Gen. Pl., I., 890. |
| 681 | Carum Carui, Linn.; Fl. Br. Ind., II., 680; Unbellifere, Caraway; Fruits ou Semences de Carve, Fr.; Kümmel, Germ. Vetn.—Sha jird (U. C. Dutt), sira, Hind; Jira, Beno.; Zira siyah, |
| | |
| | References.—Stemart, Po Pl., 104; DC. Prodr. IV, 115; Pharm. Ind., |
| | Cyclop, Agrs. |
| | Habitat.—A herbaceous plant cultivated, for its seeds, as a cold- season crop on the plains of India and frequently on the hills, as a sum- mer crop, as in Baltistin, Kashmir, and Garwhal, &c, at an altitude of between 9,000 to 12,000 feet. Distributed to Western and Northern Asia and Europe. The Greek and Latin names of the plant are said by some writers to be "derived from Caria, the native country of the plant" [Bird- |
| condiment. 682 | ¢ |
| | |
| | n ' n per- is now hists of |
| | Man remail and toward and an allocated Common allocations and the |
| | Principal and the Control of the Con |
| | |
| | |
| | |
| ~i. / | C. mgium the existence of the name Israyati-sira, that is, Luropean sira, should not by itself be viewed as excluding the true Caraway from an |

| The Caraway. | CARUI Carui |
|---|----------------|
| crenal origin since such a name might simply mean that in that part of the country it was first brought to the attention of the natives by the Europeans Indeed, the facilities of trade offered by the Persain Gulf can easily be understood to have made the people of Bombay more familiar with an imported article than with a wild or event cultivated plant of the Panjsh Himidaya. Authors are about equally divided in the restriction of the word size to Carum Carul on the one hand, and to Cumisum Crusisim on the other (Conf. with C. nigrum) Dr. Dymock says that Caraways are brought from the Red Sea Ports to Bombay where they are sold at Rt per pound. Dr. Stewart alludes to | CONDIMENT |

a considerable trade from Afghánistan, Kashmir, and other parts of the Panjáb Himálaya to the plains of India The imports of Caraway into Great Britain are about 20,000 cwts a year and chiefly from Holland It is also largely grown in Kent and Essex Oil - A valuable essential oil is obtained from the seeds, called Cara-

684

way Oil This oil is colourless or pale yellow, thin, with a strong odour and flavour of the fruit It is used in medicine and more extensively as a perfume for soaps (Spons')

PERFUMERY. 685

TRADE.

683

Perfumery - Piesse, in his book on perfumery, remarks that the odoriferous principle obtained from the seeds by distillation, when dissolved in spirit, may be combined with lavender and bergamot for the manufacture

of cheap essences in a similar way to cloves Medicine.-As a medicine the dried fruit possesses stimulant and MEDICINE.

686

water "Muhammadan writers describe the fruits as aromatic, carminative, and astringent, from them they prepare an eye-ash which is supposed to strengthen the sight, they are also used as a pectoral, and considered diuretic and anthelmintic. A caraway bath is recommended for painful swelling of the womb, and a poultice for painful and protruding piles" (Dymock's Mat Med W Ind , 304)

687

~ - - 1 C -- . 1 --

absolutely deprived, perfectly pure carvene would no doubt prove no longer to possess the specific odour of the drug By distilling it over sodium, it acquires a rather pleasant odour, its specific gravity at 15° C is equal to 0 861

| - /- | , , |
|-------------------------------|--|
| CARUM copticum | The Bishop's Weed. |
| FOOD Seed | "C, the the sam however ol, either when the control of the control |
| 689 Roots 690 | |
| | Russell, M.D., Sarun) "Carminative, largely used in curry powder" (Assistant Surgeon Shib Chunder Bhattacharit, Chanda, Central Provinces). |
| 691 | Carum copticum, Benth, Fi Br Ind, II, 682; Wight, Ic, 1, 566. The Bistor's Weed, Lovace; Ajana Seeds, Anyead, Dutch, Sison, Fr., Andos, Forl. Sym.—Almi copticum, Bent I Licuricum Ainain, Firming: L Ajonna, Rach, Permones coptica, DC., P. Ajonan, DC., Sison Anni, Jarq, Bunium andunticum, Linn Vett.—Ajoran, agrain, Himo Yevacel jurcain, Benc: 1, Jamo, Guj, Chohara Cutch, Owa, Mar, Jewind, Kashinin, Amon, oman, Tam, Omani, oman, Tet., Owa, ona. Kan, Ajwan, owa, Bour, Olo Mar, Vamanni (and according to Ainshie Ajmödum, Irohmedortha), Sans, Kamue mulati, idibel Bhabs, Aran, Zimán, ndahkwak Re |
| | Sted Hand , 114, 175, 245; Dymone, 2101 a eu 21 11 11 4, 211 4.11 4.11 5.15, |
| oil 602 Medicine 693 | mentioned by Dale |

C. 693

The Bishop's Weed.

copticum.

(Wiring's Barir Med) They are administered in flatulence, flatulent colic, atomic dyspepsia, and diarrheea, and are often recommended for cholera. They are used most frequently in conjunction with asafexida, myr

MEDICINE

an after doctors as assumatine, catulate, and stimulant, and also by the veter naive doctors as assumatine, catulate, and stimulant, and also by the veter naive practitioners in India in the diseases of horses and cows Dr. Bidie is strongly in favour of the extended use of this medicine. "As a topical remedy it may be used with advantage, along with astringents, in cases and obvasting their tendency to cause nausea and griping. I know of no remedy of equal power." The seeds have come into special notice in England and Germany for the manufacture of Thymol, enormous quan titles of which are now made and used as an antiseptic (Bmtth)

Thymol, 694 OMUM.

flatulence and as an anuspasmodic in hysterical pains. Of late, it has been extolled as a powerful antiseptic superior to carbolic acid (Home)

drunkenness and dissomania, ornum seems worthy of trial " (Waring's Bazar Med) Dr Stocks was the first to draw attention to a crystalline substance sold in the bazars of the Deccan and Sind, known as Aywair-ka-phul This is prepared from the fruits of Caram copticem or forms spontaneously on the surface of the distilled water (Pharm Ind)

Chemical Composition.—The authors of the Pharmacographia say

CHEMISTRY.

(1856) to be identical with thymol, C.H. CH, As contained in

Thymus vulgaris

on, first rectified the oil deposited nch or more in to a cold some We found the somewhat larger lete fusion On stallizes when a

| 198 | Dictionary of the Economic |
|--------------------------------|--|
| CARUM copticum | The Bishop's Weed, |
| CHEMISTRY | C, the the same however, ol, either specific gravity o 830, and saturated with sulphuretted hydrogen, crystals of (C _B H _B (C) 5H ₃ are at once formed as soon as a little ammona is |
| FOOD Seed 689 | added." (Pharmacy) Special Opinuon 5 "Sumulant and laxative. The white variety is lactogogue" (Assistant Surgeon Nehal Singh, Saharanpore) "Have used it to increase the flow of milk with no decided effect" (Surgeon D Picachy, Parmeth). Food—The seed is used parched and powdered, or raw and entire |
| Roots 690 | |
| | (Assistant Surgeon Shib Chunder Bhatfacharji, Chanda, Central Prov- |
| 6 91 | Carum copticum, Benth; FI Br Ind, II, 682; Wight, Ic, t 566. THE BISHOPS WEED, LOVAGE, AJAVA SEEDS, AMYZAD, Dutch; Sison, Fr.; AMEOS, Port. |
| | Sym — Ammi Copticum, Boils / Ligusticum Ajamain, Firming, L. Ajonan, Rob. Pyrechtis Coptiga, D.C., P. Ajowan, D.C., Sison ammi, Sacy ; Burium Aromaticum, Linn |
| | |
| | ₹. |
| | Med Hind, 171, 173 314 Lymacs, Mat Mea w 1na, 1na La, 385, |
| | |
| | gratical ordination of a find a control of the ordination of the state of the ordination o |
| OIL, 692 Medicine 693 | |
| | |

C. 693

Black Caraway.

CARUM Roxburghianum

these seeds he give the name Carum nigrum, without apparently having either seen the plant or ascertained any thing more about them. Stewart seems to have gone into the subject for he reduces Royle's C nigrum to C Caru. In this view he uppears to be supported by Mr. C B. Glarke in the Flora of Bertish in his, since Royle's by that author quieted as having found the true carawa; in Kashmir and Garahal I in what has been already and under C. Caru this opinion has been supported, but at the same time it must be added that Dr. Dymock and many other writers continue to allude to a black form of carawix. Dr. Dymock says. "Sojira the true carawa, a transverse section shows a similar structure. The flaour approaches that of Cummin, and the Persain name which it bear signifies black cummin. It is probably the article described in Persain works on Materia Medica.

aver

evpo Under C Caru it has already been stated that a considerable trade is done between the North-Himdlayan and trans Himdlayan regions with the plains of India in what has been accepted as the true caraway These two seeds are distributed all over India, the Europeans using the

forcibly draw attention to the fact that recent writers have, as it would appear, been confusing two very distinct seeds under one botanical name. It is thus probable that the vernacular names given under C. Carel and C. Draw (the above the second of the confusion of the confus

Carum Roxburghianum, Benth , Fl Br Ind , II , 682 , Wight, Ie ,

Ajmod, bodiajamo Luj References — Rath, Fl Ind , Ed C B C , 773 , Dale & Gibs, Bomb , Fl

cai ina sica

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C. 701

698

MEDICINE. 600 FOOD.

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nigrum, CHEMISTRY

CARUM

Black Caraway.

"Thymol is more conveniently and completely extracted from the oil by shaking it repeatedly with caustic lye, and neutralizing the latter

"The oil of ajwain, from which the thymol has been removed, boils at about 172°, and contains cymene (or cymol) $C_{10}H_{10}$ which, with cor-centrated sulphuric acid, affords cymen sulphonic acid, $C_{10}H_{13}SO_2OH$ The latter is not very readily crystallizable, but forms crystallized salts with baryum, calcium, zinc, and lead, which are abundantly soluble in water In the oil of aswain no constituent of the formula CioHis appears to be present, mixed with alcohol and nitric acid, it at least produces no crystals of terpin

"The residual portions of the oil, from which the cymene has been distilled, contains another substance of the phenol class different from

thymol "

Special Opinions.- Sometimes used by the natives for colds, useless as far as my experience goes (Surgeon Major C F McKenna, Cawn-pore) ' Much used in flatulence diarrhoea, and with other drugs in d) spepsia Very useful in flatulence and with dyspepsia, especially administered in powder mixed with other antispasmodics." (Surgeon G. Price Manhad). G Price, Shahabad)

contains, and which is i in Madras famine relief

I don't think it was of a dr

51

(Hospital Assis tomachic, mixed with black pepper and salt and taken in empty stomach, relieves flatulence and colic and promotes digestion' (Assistant Surgeon Shib Chun-

(G B Madras). used in dyspep-

der Bhattacharjs, Chanda, Central Provinces) "The water distilled from the seeds is very useful as a carminative, and is largely used by the natives, being administered to newly born infants as a carminative and stimulant

ly used as a Central Prov

mixtures for r in powder, an

to newly bor vinces) Negapatam)

W A Barren Belgaum, Bombay)

Food -The seeds are aromatic, and form an ingredient of the preparation known as ban

FOOD

696

697

Carum nigrum,? Royle, Him Bot, 220.

BLACK CARAWAY Str -State and Dadon Dow II & -

kırmáni, sıyah sırah, Pers

References -Pharm Ind , 99, Baden Powell, Pb Prod , 351, Moodeen Sheriff, Supp Pharm Ind , 90, Dymock Mat Med W Ind , 305, S. Arjun, Bomb Drugs, 63, Birdwood, Bomb Drugs, 39

Habitat -Royle mentions that seeds under the name of Zeera seeah are imported from Kunawar, and that these are "a kind of caraway" To

| | CARYOPH | VI.I.IIC |
|--|--|----------|
| Cloves. | aromai | |
| 503 U. C. Dutt, Mat. Med. Hind., 154 307, Dymock, A | Mat Med | |
| • | | |
| Habit. | • | |
| my the second of | 1 mha na 1 | |
| Control of the control of | | **** |
| : | | |
| in the 12th year, when the average annual produce may be est 6-7b of marketable fruit from each tree. There is usually a cityear, but in Sumatra the trees often bear only twice in 3 years. It is prime, the tree has a ranged appearance. It seatsence in S supposed to be limited to a distration of about 20 years, exceptions of the supposed to be limited to a distration of about 20 years, exceptions of the supposed to be a supposed to the supposed to through the supposed to the supposed to through the suppose | When past umatra is of in very on does | |
| matting near a slow wood fire, and very rately they are scaled | led in hot | |
| water before smoking They are ready for packing when the easily between the fingers " (Spons Encycl) | hey break | OIL. |
| • | • | 707 |
| | | |
| of spirit Description of the Drug — "The varieties of cloves occurring merce do not exhibit any structural differences. Inferior kind to character to the highest production of the pr | g in com- | |
| • | | |

C. 707

Claws

Habitat -A herbaceous plant extensively cultivated throughout India. from Hindustan and Bengal to Singapore and Ceylon

MEDICINE 702

Medicine -The seeds of this species are useful in fuccin, vomiting and pain in the bladder. They form an ingred ent of carminative and stimulant preparations, and are useful in dyspensia

Snecial Opinions — 6 Carm native It is an essential ingredient of native cookery and is generally called Randhum," (Assistant Surgeon

Shih Chunder Bhattacharis, Chanda Central Prominces

FOOD 703 Logver 704

706

Food —Often raised in gardens during the cold season for the seed which is used in flayouring curry, also used by the Europeans as a substitute for parsley (Royle) Extensively cultivated in Gajarat (Lisboa)
Leaves though of an unpleasant smell are now and then used by Euroneans as a substitute for parsley (Voigt)

705 Carving, Fancy work, Images, &c -

Timbers used for -Berberis nepalensis, Spreng (use | Gmelina arborea, Roxb (carving ful for inlaying)

Buxes sempervirens Linn (carving) Cedrela Toona, Roxb (carving) Celastrus somosus. Royle (carving

and engray ng) Chickrassia tabularis, Adr Tuss (carving)

Cocos nucifera, Linn (fancy work) Cratæva religiosa, Forst (models) Cupressus torulosa Don (images) Dalbergia cultrata, Grah (carving)

D latifolia, Roxb (carving and fancy work) D Sissoo Roxb (carved work)

Diosnyros Ebenum, Konig (used for injaving) D melanoxylon, Roxb (fancy work

and carving) Euonymus grandiflorus, Wall (carv ing) E. Hamiltonianus, Wall (carving

into spoons) Givotia rottleriformis, Griff. (carv

ing figures)

(mages) Hardwickia binata, Roxb mental work)

Holarrhena antidysenterica. Wall (carvings) Kydia calycina, Rozb (carving) Meha Azadirachta, Linn (idols)

Pistacia integerrima, 7 L Stewart (carving, ornamental work) Premna tomentosa, Willd (fancy workt

Santalam album, Linn (carving) Stephegyne parvifolia, Korth (carv ed articles)

Symplocos cratægoides, Ham (carying)

d,I,

(dols) Wrightia tinctoria, R Br (carving) W. tomentosa, Rom & Sch (carved

CARYOPHYLLUS, Linn . Gen Pl . I . 710

work)

Carvophyllus aromaticus, Linn , DC Prodr . III . 262, MYRTACE CLOVES

Syn,-Eugenia Caryophyllata, Thunberg n , I , Reference ıarm 15th

C, 706

Ed , s

Cloves.

CARYOPHYLLUS aromaticus.

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Sp. U. C. Dutt, Hat Med Hind, 154, 377; Dymoch, Mat, Med Wi Ind, and Ed., 385, O'Standardon B. and Druger of Sml., 151, Bases Med., 44, S. Ayam, Pr. 55, Lassan, Pl. of B. m.
         34; Spons, Encyclop, 1807,
Treasury of Botany, Aymir Me
   Habitat.-A native of the Moluccas. Cultivated in Southern India
The Dutch tried to restrict its cultivation to the Island of Amboyna,
but in the course of time it got introduced into India and other tropical
countries. The flower-buds of this plant yield the cloves of commerce
                                                                                 CULTIVATION.
   Cultivation and wield _ !! In ~ !!
tı
                s ne tree naturally selects a volcanic soil, and a sloping
 tion The . al.
 in the 17th
              E. t. mas a tagged appearance. Its existence in Sumatra is
 supposed to be limited to a duration of about 20 years, excent
 superior soil, when it may ----- . . . .
 not bear till the 12th-15th
  years Hence it is manaci
   mences immediately they
  most usual plan is to pluce
   tating the operation in t .
  however, they are beaten of by long bamboos, and caught in cloths
   spread below. The plucked cloves undergo a process of
   confere a he
                                                                         . mple
   ex
                                                                           , but
   ele
                                                                            with
   m
                                     a c tearly for packing
   easily between the fingers" (Spons' Encycl)
       On.-Every part of the plant abounds well
   buds and flower-stal
    tial oil The proces
    is a colourless or a
    of cloves It easily
    sively made use of
    often adulterated wit
    dissolving oil of clov
        Description of the Drug -"The varieties of cloves occurring in com-
    merce do not exhibit any structural differences. Inferior kinds are at
    tinguished by being less plumn leer be to
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value thus: Penang, Bencoole The cloves met with in the Inc Those suited for medical use sh

CARYOPHYLLUS aromaticus.

Cioves.

DESCRIPTION OF EHT DRUG

spicy, pungent taste, and should emit a trace of oil when pressed with the nail (Waring & Basar Medicines). "The Americans have introduced into commerce an initiation in a solution of true natives, are largely

of mixed spice and cloves or fruits are Encycl, 1808)

Medicine —The

Medicine —The dried flower-buds which constitute the cloves of com-

medicine Buds 708

grain pill made of equal parts of jalap and powdered cloves generally opens the bowels 'Cloves are much used in Hindu medicine, as an

164)

excellent effect in debility, loss of appetite, and in convolescence after fevers. "The oil, Lavanga-tela, is used externally in rheumatic pains,

tonic, and digestive qualities They have a curious superstition to the effect that one male clove eater daily will prevent conception" (Dymock's Mat Med W Ind. 202)

Chemical Composition—"Few plants possess any organ so rich in essential oil as the drug under consideration. The oil known in pharmacy as Oleum Caryophylis, which is the important constituent of cloves, is obtainable to the extent of it to 20 per cent. But to extract the whole, the distillation must be long continued, the water being returned to the same naternal.

"The oil is a colourless or yellowish liquid with a powerful odour and taste of cloves, sp. gr. 1046 to 1058. It is a mixture of a hydrocarbon and an oxygenated oil called Eugenol, in variable proportions." The for-

ceous odour.

of eugenol is given by the formula C, H, OH CH CH, Lt belong

Cipves.

CARYOPHYLLUS aromaticus.

to the phenol class, and has also been met with in the fruits of Pimenta officinalis, in the Bay leaves, in Canella bark, in the leaves and flower-buds of Cimamonam reylandcum, and in Brazilian clove bark (Dicypellium caryophyllatim, Aces)

MEDICINE

little Salicylic acid, C, H, COOH), which may be removed by shaking

ss, inodorous substance, brained it in small quanuch we had previously

uantities of alcohol E Mylius (1873) obtained from it, by nitric acid, crystals of Caryophyllinic Acid, C₂₀ H₃₁ O₄

**Cormifelia And, obtained in colourless crystals, C_H H_BO_H, in 1851, by Muspratt and Dansan after digesting an aqueous extract of cloves with nitro acid, is a product of this treatment and not a natural constituent of cloves

rin

relieve irritation of the throat and hacking cough! (Brigade Surgeon GH Thorn!) BA Is B Is work at "S milest and are "(Assistant Linces)"

used in the Cochin) "

Food hot spice th

Foreign Trade in Cloves

EXPORTS AND IMPORTS Year RE EXPORTS Quantity Value Quantity Value +850-8± 2 583,852 14,40,739 1,061 115 6,20,330 2 653 836 12 64 254 13 09 518 735,892 1831-82 3 49,879 1882 83 3 878,232 1,230,104 3 74 857 1883-84 3 893,159 10 61,206 1,068 906 2 75 564 1284-85 11 00,841 1,649 040 3 67 242 700D. 700 TRADE. 710

CARYOTA urens

TRADE

Sago Palm

Imports for 1884 85

| Pres deacy to which imported | Quant ty | Value | Country from wh ch imported | Quantity | Value |
|--|--------------------------------------|-----------------------------------|-------------------------------------|------------------------------|-----------------------------|
| | B | R | | 135 | R |
| Bombay Bengal Br tsh Burma Mad as | 4 598 4 9 190 526 1 288 773 | 10 50 680 58 283 425 453 | Zanž bar Aden Other Countries | 4 776 842 11 767 2 397 | 11 05 877 2 908 1 056 |
| TOTAL | 4 791 006 | 11 09 841 | Total | 4 791 006 | 11 09 841 |

Exports for 1884 85

| P es dency from which expo ted | Quant ty | Value | Country to which | Quant ty | Value |
|------------------------------------|-----------------------------------|---------------------------------------|---|---|---|
| Bombay Bengal Madras S nd | 1 618 465 29 65 1 390 20 | R 3 55 692 10 090 1 462 5 | Un ted K ngdom Ch na—Hongkong Stra ts Turkey in Asia Aden | Th 1 112 224 349 698 124 01 15 137 7 000 | R 2 32 739 84 966 33 543 3 887 1 790 |
| Total | 1 649 040 | 3 67 249 | Fance Other Count es TOTAL | 7 000 33 880 1 649 040 | 3 67 249 |

Very I tile can be sa'd regarding the present position of the new industry of cult vating cloves in South Ind a Good samples were, how ever shown at the Colon al and Ind an Exhibition

CARYOPTERIS, Bunge Gen Pl, II 1157

Caryopteris Wallichiana, Schauer DC Prodr XI 625; [Verbenace.

Vern -- Moni mohani Kumaon Shechin Nepal Malei Lepcha References -- Brand s For Fl 370 Gamble Man Timb 299

Hab tat —A large shrub with thin grey papery bank peeling off in vertical strips met with on the outer H malaya from the Indus to Bhutan ascending to 3 000 feet

Bhutan ascend ng to 3 000 feet Structure of the Wood —Dark grey, moderately hard with the scent of cherry wood

CARYOTA, Linn Gen Pl III 918

CARYOTA URENS 711 Caryota urens, Linn Gamble Man Timb 420 PALME

KNOWN IN BONBAY AS THE HILL PALM also SAGO PALM

Vern — Mar Hind Rungbong s mong Lercha Bara flawar Ass Salopa Uriya Marika jhar Dec Bherawa berl bh rli mahad berli Sago Palm.

CARYOTA urens.

and Shart and a fact and a sales of Africa State of the Africa State of Africa

milioda, kiniso, sivahi.
Delegangan - Roch Fl. Ind. Ed. C.R.C. 668 : Reandy. For Fl., 55

References — Roxb, Fl. Ind., Ed. C.B.C., 668; Brands, For. Fl., 550, Kurs, For. Fl. Burm, II., 520; Voyet, Hort Sub Cal, 637; Thaviles, En. Crolon Pl., 329; Dals & Gibs, Bomb Fl., 278; Pharm, Ind., 228;

Habitat.—A beautiful pulm, with smooth, annulated stem, met with in

the forers of the western and eastern most zones. On the Western Gbast, a textends to near Mahableshwar in the Stuttment Reports of the Chanda district it is stated that this palm abounds in the southern corner of Aheree, and might with advantage be extended to all parts of the district, for it thrives well wherever it is planted. It is common in Burma, Bengal, and Orssa, ascending in Sikkim to 5,000 feet.

Fibre.—"The leaves give the Kittul Fibre, which is very strong and is made into ropes, brushes, brooms, baskets, and other articles; the fibre from the sheathing petiole is made into ropes and fishing-lines" (Gamble), and is said to be suitable for paper manufacture.

and is said to be suitable for paper manufacture.

At the Colomal and Indian Exhibition (1886-87) much interest was taken in salopa fibre sent from Orissa, Burma, and Kolaba in Bombay. A corset manufacturer applied at the office of the Indian section for fibre which might take the place of whalebone in corset-making. He was shown the salopa (kittus) fibre and also the similar cord like fibres from the interior of the stems of the cocoanut and palmyra palms. It

712

1

Leyion At the Colonial and Indian Exhibition he pointed out to the writer a sample of the much inferior kithul like fibre from Arenga sacchariera (see A. 1336) as the kithul he had formerly seen as sent from India He admitted that the sample of salopa shown him at the Exhibition was

as good as any he had ever seen from Cevlon, and seemed confident a

oars is employed as a now string or as a rishing line (see 13 to 67)

distillation of the toddy obtained from this elegant palm, which is not un

Medicine - "An excellent spirit is obtained by the fermentation and

" Is in

It is commonly reported that in Ceylon the black fibre from the leaf-stalks is manufactured into ropes which are of great strength and

large trade could be done in the Indian fibre

(Royle Fib Pl)

urens

Tomentum stem fibres

MEDICINE

713

common on the west coast of the Madras pennisula It is well adapted for pharmaceutical purposes "A glass of the freshly drawn toddy, taken early in the morning, acts as a laxative' (Pharm of India) The nut is used as an application to the head in cases of hemicrania, from an idea of the supposed efficiency of the half nut in curing the affect ed half of the head' (S' Arjun, Bombay Drugs) FOOD Food -Roxburgh writes "This tree is highly valuable to the natives 714 of the countries where it grows in plenty It yields them, during the hot season, an immense quantity of toddy or palm wine I have been in formed that the best trees will yield at the rate of 100 pints in the 24 hours The sap in some cases continues to flow for about a month When fresh, the toddy is a pleasant drink, but it soon ferments and when distilled becomes arrack, the gin of India. The sugar called jag gery is obtained by boiling the toddy The pith or farinaceous part of the trunk of old trees is said to be equal to the best sago, the natives make it into bread, and bol it into thick gruel, these form a great part of bod of bose people and dong the late famine (1830?), they I have reason to believe this sub eaten the gruel and think it fully get from the Malay countries 14 4 4 4 1 ' The trees are tapped when they are from fifteen to twenty five years old Besides bruising and binding it, the spathe, which is called kote, is heated to make the juice flow. Every three or four days a white value of the juice the big trunked palm differs little from the palmyra Since 1879 when the tree tax was raised from 15 6d to 6s (annas 12 to R3), the number of trees tapped has greatly fallen" (Bomb Gas (Kolaba), XI, p 30) TIMBER and dur-715 he wood conduits. general use tot neid tools (Bomb Gas, AV, 1, 05) 716 Cascarilla bark, the bark of Croton Eluteria, EUPHORBIACEE A native of the Bahamas The bark is imported into India C. 716

CASEARIA tomentosa. CASEARIA, Jacq., Gen Pl, I, 796 Casearia esculenta, Roxb , Fl Br Ind , II , 592 , Sanydace & 717 Syn — C LEVIGATA, Dals, in Hooker's Jour Bot, IV, 107, C CHAM PIONII and C ZETLANICA Thwaites Vern - hunda jungura, TEL , Wal mareka, SING References -Roxb, Fl Ind, Ed C B C, 377, Drury, U Pl 119, Dals & Gibs, Bomb Fl, 11, Thwaites, En Ceylon Pl, 19 Habitat - ' ' Coorg, comr to Singapore MEDICINE Medicine -" The roots are purgative, and as such used by the hill 718 people" (Roxb) Food -"The leaves are eaten in stews by the natives" (Roxb) FOOD 710 C. glomerata, Roxb , Fl Br Ind , II , 591 720 Vern - Luriur, Sylher, Burgonli, NEPAL, Sugvat, LEPCHA References - Roxb. Fl Ind. Ed CBC. 276. Kurs. 1. 530. Gamble. Man Timb, 205 Habitat -A shrub or (in the interior of Sikkim) a tree 20 to 30 feet in height. Frequent in Bhutan and on the Khasia Hills at an altitude of 3,000 feet Structure of the Wood - Vellowish white, moderately hard, rough, TIMBER. weighing between 45 and 48th per cubic foot. Used for building, 721 charcoal, and occasionally for tea boxes C graveolens, Dalz , Il Br Ind , II , 592 722 Vern - Chilla, naro, aloal, kathera, pimpri, Hind, Rari, Kol., Beri, Khaewar, Newri, Santal, Girchi, tundri, Gond, Rewat, Kurku. Moda, MAR References - Brandis, For Fl. 243, Gamble, Man Timb, 206, Dals & Gibs, Bomb Fl, 11, Lisboa, U Pl of Bomb, 81 and 265 Habitat -A shrub or small tree, 20 feet in height, found in Garhwall

and humaon, Sikkim at an altitude of 1,500 feet, Deccan Peninsula and in Burma St- -4 . gh, weight

TIMBER purpose DOMESTIC sion of the

C. tomentosa, Roxb, Fl Br Ind, II, 593, Wight, Ic, 1 1849, Syn - C ANN NO. DI SOCI

725

724

LESION FL, 19

v.

7 , 243 ; Lisboa, es. En

C. 726

Habitat -A shrub or small tree, attaining a height of 25 feet, common throughout India and Ceylon

Medicine - The bark is bitter and used as an adulterant for the MEDICINE (Mallotus philippinesis or) Kamela ponder "The pounded fruit yields a

CACCIA

| Absus | Senna |
|---------------|--|
| MEDICINE | milky, acrid juice employed to poison fish" (Brandis) The leaves are used in medicated baths and the pulp of the fruit is a very useful diuretic (Lindley). |
| TIMBER 727 | Special Opinion —§ "Bark applied externally in dropsy" (Rew A Campbell Santal Mission, Beng il) Structure of the Wood —Yellowish white, moderately hard, rough, close-grained, we ght 41th per cubic foot, used to make combs. |
| | Cashew-nut. See Anacardoum occidentale, Linn, Anacardiace. |
| | Cassareep, and |
| | Cassava Bread, and Tapioca, see Mamhot utilitissima, Pohl, Eurhorbiacez |
| | CASSIA, Linn Gen Pl, I, 571 |
| | The word Cassas as taken from the Latin and the Greek Kasona, and from this has been derived Cassas the Italian, and Cassa, the French In the Scriptures two or three different things appear all to be rendered as Cassa. The genus is of considerable importance from a medical point of view |
| 728 | Cassia Absus, Linn., Fl Br Ind II, 265 |
| | Vett — Tachmiags chainmeand 1 t., 32 h., cr 1 t. chainwan cheinmand Pees , Mulasipal-turan karunka nam vettulu Tett. Karun kolla M Chimar or chimer, chimell, Guy Sino |
| | References —Rosb Fl Ind Ed CBC 351 Gamble Man Tunb, 135 Thamtes, En Ceylon Fl 196 Stematt Fb Fl 6 Aichtean, Cat Fb Fl 1 51 Pharm Ind 78 Moodeen Sher ff Supp Fl arm Ind 92 Dynach Beng Dispers 30 across 151-152 Beng Dispers 30 across 151-152 Beng Hung Dispers 151-152 Beng Hung Dispers 151-152 Beng Hung Dispersion 151-152 Beng Hung Disp |
| | Habitat —An erect annual 1-2 feet high having grey, bristly, viscose hairs Found growing at the foot of the Western Himálaya and from thence distributed to Ceylon History —The seeds of this plant were used by the ancient Egyptians |
| | in the treatment of ophthalm a, and through them the Roman and the Greek, |

MEDICINE Seeds. 729

trial to this treatment, and the results were on the whole confirmatory of its alleged efficacy Dr. G Smith, Superintendent of the Eye Infirmary at Madras, in his report, characterises it as a dangerous

and from the latter the Muhammadan unters became aware of their properties Dioscorides speaks of them under the name of Akakális Their

European Senna

73I

| | Alexandrian Senna of Commerce | CASSIA alata. |
|--|---|-------------------------|
| apriare forma blanch discontract grassee (Su use with flat con | lication in catarchal ophthalmia and granular lids, adding that its lication causes great pain. As met with in the bazárs, these seeds of a black, shining colour, somewhat flat, of an oval or oblong m, pointed at one extremity, about one-sixth of an inch long, having ittertaster. (Plaram Ind.) They are sery bitter, somewhat aromatic muclaignous, and, as such, have been found very useful in mucous orders. An extract is prepared from them and used to purify the offer by the contract of the properties of the seed of the seed possesses simulant and diuretic properties (dose 5) into 10 security. According to some authors, a plaster made from the Special Opinions—6. "Seeds are found efficacious to incidentify great of the shadow, Burrisal). "Cathartic, dose \$1\$ to 3 dirachms, d in habitual constipation, or in constipation caused by pregnancy, the confection of rose and liquorice, have proved effective. In dysepsia, ultent cole; and bilious headache, it is given as a compound powder, taming girger, black rock-salt, amfa and bury, and chotty hus!" psystal Ansitant Abdulla, Civil Dispensary, furbiblepers, furbiblepers, | MEDICINE. Extract. 730 |
| | | |

According to Dr Dymock, the Bombay supply comes from Sind and

Cutch, value, R4 a Surat maund of 37 1th

Cassia acutifolia, Delile

THE ALEXANDRIAN SENNA Of Commerce.

SJn.—C Senna, β Linn C Lanceolata, Nectoux, non Forsk net. If GA, C Lentiva Bisch Sena acutifolia, Batka See also the remarks under C Lanceolata, Forskhal

Habitat -A native of Nubia (at Sukkot, Mahas, Dongola, Berber), of Kordofan and Sennaar, and other parts of Africa,

For Indian Senna see C. angustifolia, C. Burmannii, and C. oboyata.

C. alata, Linn , Fl Br. Ind , II , 264.

732 Vern __ " - - - -

Dyes and Tans) The numerous samples of this bark, shown at the late Colonial and Indian Exhibition, were highly commended by the tanners

733

MEDICINE Leaves. 734

TAN Bark.

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| CASSIA angustifolia | Indian or Tinnevelly Senna. |
|------------------------|---|
| | program of all a shawlet ladar Den 1 Martie Tala and ath |
| | Stewart, and Dr Rean As a general rule, they appear to be more effectual in recent cases than in those of long standing. The Bengal Pharms copocia contains the following formula for an continent of the leave of the new formula for a continent of the new formula |
| Tincture. 735 | , the many cases it is productive of excellent effects. The leaves taken internally act as an aperient. Mr. J. Wood reports that a uncture of the dired leaves has been found to operate in the same manner as senna, an Dr. Pulney Andey states that an extract prepared from the fresh leave is a good substitute for extract of Colorynth. It is desirable that furthe trails should be made with them." Roxburgh remarks that, according to the Telinga and Tamil physicians the leaves cure all po sonus bites as well as venereal affections, and |
| Roots 736 | the reacts the dispositions only as well as reinitial directions, and |
| | . : " |

common salt" (Surgeon Major J. M. Zorah, Balazore) "Expectorant, tonic, and astringent, used as a mouth wash in stomatitis," (Surgeon-

737

Cassia angustifolia, Vahl, Fl Br Ind, II, 264

INDIAN OF TINNEVELLY SENNA

Syn.—C LANCEOLATA, Roxb, W & A, and (') Wall, but not C LANCEO

Indian or Tinnevelly Senna.

CASSIA angustifolia

shona makhi, MAR , Nattu mila virai nila virai, nila-vakai TAN , Nela tangédu Tet Nila vaka MALA , Nelavarike hAN , Sa ia kola nild vari, nelavari Sino , Puve kain yoe, BURN

AL DE DO OF DI 20 II WAS AN

many parts of Inda The Flors of British Indas says C angustfolias has no cla m to be considered indigenous to Indas T C lanceolata, Port of Arabat II and the C management of the Company of the Company of the Company of the Statement (see Pharmacographia, also Bertley and Trans., Med. P!) that C angustifolia is indigenous to Sind and the Paulis of the Statement of the Pharmacographia, also Bertley and Trans., Med. P!) that C angustifolia is indigenous to Sind and the Paulis of the Statement of the Pharmacographia.

The cultivated plant as met with in India is the Tinnevelly Senna of commerce and the uncultivated the Bombay Senna or Sonna Mekki or Sana miki Sona maki of the East. The last mentioned is imported into India from Arabia. In Bombay it is cultivated at Poona to supply the requirements of Government Hospitals and not as an article of commerce Stocks say it is grown in Sin.

Botamic Diagnosis—This species is closely related to the preceding, but the leafiets are usually 58 lyagate, are narrower, being owal, lanceloid, tapering from the middle towards the apex, they are longer, often nearly 2 inches long, and are either quite glabrous or furnished with a very scanity pubescence. The legume is narrower (7-8 lines broad), with the base of the style disturbly prominent on its upper edge.

Description of the Drug -This plant thus affords two of the commercial forms of senna -

1st Tinnyvelly Senna —This is the leaf obtained from the plant carefully cultivated in South India and (at Poona) in Bombay Owing to greater care in its collection, Innevelly senna is of better quality than the Arabian article The leaves are also larger, being 12 inches long of

Tinnevelly.

Dr Dymock says that large quantit es of Tinnevelly senna are now sent to Bomba, and that so successfully does this Indian article compete in the market, that if e importat on of Arabian senna is rapidly declining, Tinnevelly senna being exported to Europe in its place

Arabian. 730

| 214 | Dictionary of the Economic |
|---------------------------|--|
| CASSIA angustifolia | Arabian Senna |
| MEDICINE Leaves 740 | Medicine — Senna was first made known by the Arabs in the mint century it is extensively employed as a simple and active purgative. The Alexandran is generally regarded as more powerful than Tinnevell and the Arabian or Moka much inferior to either of these. The object |
| | of potash, tartrate of potash or sulphate of magnessum along with ar Dr "and at the |
| | Dr Waring (Bazar Melicines) says "The imported senna met with in |
| | |
| CHEMISTRY | decoction for fevers and also to cattle Chemical Composition—The purgative property is considerably increased by comb nation with bitters. This fact has been confirmed by many observers. The purgative properties are due essentially to a glucoside acid named. Cathartic, Acid. This which is almost insoluble in the conformation of the conformatio |

onsiderably inn confirmed by tually to a glust insoluble in hloroform In senna and magnes um and in this form

insoluble in alcohol The objecat aholic decoction, although the nna yields rapidly one or ninutes after partaking the

by being reddened on the addition of ammonia Senna taken by wet nurses with equal rapidity influences the milk, purging the sucking infant. If injected into the blood senna acts as a cathartic

For further particulars see ' Alexandrian Senna" under C acutifolia, and for Senna substitutes see C obovata

purchased at one anna a lb" (Surgeon Major W Dymock, Bombay)
Powdered leaves are used in secondary syphilis" (Surgeon Major J L Ratton MD Salem) 'Senna leaves are always purchased in the basiars and esteemed for their cathartic properties' (A Surgeon) An effect on purgative commonly taken by the natives as a cold infusion, causes griping and abundant flow of mucus (Assistant Surgeon Shib Chunder Bhuitacharys, Chanda Central Provinces) ' Not much used in these days" (Beigade Surgeon S M Shircore, Moorshedabad) C. 740

| Products of India | |
|--|---|
| Tanner's Cassia | CASSIA auriculata |
| Cassia auriculata, Linn , Fi Br Ind , II , 263 THE TANNERS CASSIA Syn — SENNY AURICULATA, Roth VC — | 741 |
| Ren ntriping par par | t |
| , , , , , , , , , , , , , , , , , , , | Y |
| Habitat—A tall shrub with the virgate branches and under side of the leaves finely grey downy. Wid in the Central Provinces, the Wester Pennsuals. South Inda, and Ceylon, other planted elses fiere. Gum—It is said in Stone Bergelopada in the yellowing the Stone Commender of t | GUM 742 y DYE & TAI Eark 743 g d d s d s s |
| matter, apparently not used conomically 5" Skins of animals are tanned by sooking them in water in which the bark of this shrub has been infused for several days" (Honerar, Surgeon P. Kunsley, Chuccale, Ganjian) | Flowers 744 |
| Fibre - Specimens of the bark were sent to the Calcutta Exhibition | FIBRE 745 |

tuis piant (Koxo)

FIBRE 745

Medicine -"The spens of this common Indian plant, like those of

CASSIA

746

Bur mann is.

| , | |
|--|--|
| Bark 747 Leaves 748 | obtusely pointed at one extremity, and varying in colour from brown to dull olive-green they are tasteless and inodorous. The agarts is highly astringent, and Dr. Kirkpatrick states (op. cit.) No. 475) that he has employed it in the place of oak bark for gargles, enemas, &c., and found it a perfect substitute for the imported article. Both the seeds and bark appear worthy of further trials. A spirituous liquor is prepared in some parts of India by adding the bruised bark to a solution of inolasses, and allowing the mixture to ferment." (Waring, Pharm. Ind., pp. 78, 79). A decoction or infusion of the Leaves of this plant is much esteemed as a cooling medicine by the Singhalese, and also as a substitute |
| | for tea (Thwastes Murray) Anslie says that the Vytians reckon the |
| | |
| Plant 749 Flower-buds 750 | into the eyes Special Opinions — § "Bark substituted for oak-bark Seeds powdered a good local application for ophthalma" (Apolhecary Thomas Ward, Madanopalia, Cuddapha). "Aniscorbiute, antibilious, *trfpila, which is made up of dry awala, *gall, and hirada, is used as a diuretic and also as an expectorant' (Surgeon W Barren, Bhist, Cutch) "The whole plant, or any part of it, is used in diuresis and diabetes with fair results. The decoction of the flower-buds is an agreeable form in which it is taken in |
| | , , |
| | |
| FOOD Leaves, 751 DOMESTIC Tooth brushes 752 Root | Bangalore; Food.—The leaves are caten as a green vegetable in times of famine (Lisbo). Domestic Uses —The branches are largely used by natives as tooth- brushes, and are esteemed as preferable to those of any other plant for this purpose The root is of great use to workers in iron for tempering the metal (Antist) |
| 753 754 | Cassia Burmannii, Wight (in Madras Jour , VI , t 5) |
| | Vern.—The same as those of C. angustifolia, Vahl |
| | |
| | Hablate—A glabrous, shrubby plant, 1 4 feet in height, often procumbent, pod much curved into a kidney-shape, with a crest in the middle of the valve opposite each seed, leaflets 4-8 pairs. Frequent in the Panjáb (Salt Range, ascending to 2,500 feet, where it is known as sanna) and Trans-Indus (where it is called jájan), according to Brandis; it |

C. 754

CACCIA

| The Purging Cassia | Fistula. |
|--|----------|
| extends to Sind and the Western Peninsula Distributed to Arabia, Egypt, Nabia, and Abyssima Médicine —The whole plant is sold in the bazárs as a substitute for the true senna under the name of country senia. Its action is of course similar, though much inferior, to Tinnevelly or Metca senna It seems probable that many Indian authors have confused this with C. angustifolia in the published descriptions of that drug (Conf with C. obovata, Colladon) | |
| Cassia Buds See Connamomum Tamala, Nees, LAURINEE | [|
| C. Estula Linn Fl Rr Ind 11, 26r Wight Ic , 1 260 | |

THE INDIAN LABURALM, THE CASSIA FISTULA OF PURGING CASSIA Eng. CASSE OFFICINALE, CASSE MONDEE, CASSE, For ROHEEMASSIE PURGIERCASSIE, FISTELAASSIE, Germ., CASSIA, II., CAMA FISTULA, Sp.

Syn -Cathartocarpus fistula, Pers , Cassia Fistula, Willd as in Rost of Ind

Vern - Amalias gumalah, Hind, Duk, Alash, ali, karangal, kiar, kaniar Pa, Raj briksh, kitola, Kumon, Raj briksha eral, Chim

References -D 1 D 1-3 C3 CB C

Habitat —A moderate-sized, decidious tree of the Sub Himalayan tracts, and common throughout India and Burma, ascending to 3 000 feet untainous tracts skiring the untainous tracts skiring the air, and extending through

var), and extending through It chiefly occurs as a small ight, leafless in March, the

long pendulous racemes of bright yellow flowers and fresh green leaves appearing together in April, but sometimes a second flowering occurs in autumn. The long, brown, pendulous, sausage-like pods, 1-14 feet in

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| The Purging Cassia. |
| |
| |
| Exhibition from Travancore. Dye and Tau—The bark is used in tanning, chiefly along with Terminalia. Dr. McOann reports that in the district of Lohárdagá, in Bengal, a light-red dye is obtained from the bark, with alum as a mordant, 2 chitacks of bark with 2 close of alum being boiled together. The colour is deepened by the use of pomegranate rind. Mr. Wardle reports that the bark contains only a very small quantity of colouring matter. It yielded yellowish drab with useer silk, light fawn with orah and eri silks, and got you have a silk of the bark is used as tan. McOann describes the process of tanning as follows; "Skins, after being treated with line—a described to a language of the silks of the silks used to the pounding it tomentosa." |
| for 2.4 hot (now Sir E Bijnor Experiments were tried at the Government factory, the result being that amaltas bark was pronounced a very valuable tanning material. The North-Western Provinces do a small trade in exporting the amaltas bark. |
| |
| |
| the second secon |
| |

| The Purging Cassia. CASSIA Inanceolata. known Lenetive Electuary (Confe. Special Opinions —§ 'A very able The pulp does not keep frethe unbroken pod." (Briggate Signer) The first imported into Yark "The pulp of the npe pod is commonly used in the flatue navel to produce applied in ring-od purgative, experience of the flatue navel to produce applied in ring-od purgative, experience of the flatue navel to produce applied in ring-od purgative, experience of the flatue navel to produce applied in ring-od purgative, experience of the flatue navel to produce applied in ring-od purgative, experience of the flatue navel to produce applied in ring-od purgative, experience of the flowers are largely used by the Santals as an article of flood of the flowers are largely used by the Santals as an article of flood of the flowers are largely used by the Santals as an article of flood of the produce of the flowers are largely used by the Santals as an article of flood of the flowers of the flowe | | |
|--|--|--|
| I trequently use in constipation, especially in delicate women frail an ounce with warm milk at bed-time is enough for a dose" (Surgeon-Major R L Datt, Pubna) "The pulp of the nipe pod is commonly used major R L Datt, Pubna) "The pulp of the nipe pod is commonly used in the flatenance of the flatena | The Purging Cassia. 1a | |
| ounce with warm milk at bed-time is enough for a dose" (Surgeon-Major R L Dutt, Pubna) "The pulp of the nipe pod is commonly used sink at night, this sistant Surgeon "In the flatuanized to produce applied in ring-od burgative, ex-Major and the surgeon (Austitunt Surgeon Wehal Sing, Saharunpore) Food—The leaves, parched, are said to be eaten as a mild laxative with food "The flowers are largely used by the Santals as an article of food" (Campbell) The pulp of the pods is largely used in Bengal to flavour native tolacco. Stricture ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' | Special Opinions —§ A very able The pulp does not keep fre the unbroken nod "(Brigade Si | MEDICINE |
| ounce with warm milk at bed-time is enough for a dose" (Surgeon-Major R L Dutt, Pubna) "The pulp of the nipe pod is commonly used sink at night, this sistant Surgeon "In the flatuanized to produce applied in ring-od burgative, ex-Major and the surgeon (Austitunt Surgeon Wehal Sing, Saharunpore) Food—The leaves, parched, are said to be eaten as a mild laxative with food "The flowers are largely used by the Santals as an article of food" (Campbell) The pulp of the pods is largely used in Bengal to flavour native tolacco. Stricture ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' | | |
| Vern — Konda tantepu chettu Tet., Wal ahalla, Sino References — Roch Fi Ind. Ed C.B.C., Str., Kurs Ear Fl. Burm, I., 304 Gamble Man Timb. 157 Theaster Ed Cerlon Pl. et. Ralfour | ounce with warm milk at bed-time is enough for a dose" (Surgeon-Major R L Dutt, Phbna) "The pulp of the rupe pod is commonly used ink at might, this sistant Surgeon "In the flatumavel to produce applied in rung-comparative, exception of the pulp of the flatumavel to produce applied in rung-comparative, exception of the surgeon Netal Sing, Saharungore, Netal Sing, Saharungore, Saharungore, Food—The leaves, parched, are said to be eaten as a mild laxative with food. "The flowers are largely used by the Santals as an article of food." (Campbett) The pulp of the pods is largely used in Bengal to flavour native tobacco. Structure "Food grey or food grey or food grey or food the pulp of the pods is largely used in Bengal to flavour native tobacco. Structure "Food grey or food grey or | FOOD. Leaves 705 Flowers 760 |
| | Vern — Kanda tantepu chettu Tel , Wal ahaila, Sing References — Revb Fl Ind , Ed C B C , 352 , Rurs For Rl Burm , I , 394 Gamble Man Imb , 195 Theorites En Cevino Pl of Rellowe | 769 |

Habitat -A small tree of the eastern part of South India and of

Medicine —The bark mixed with sugar and water is given in diabetes, and a preparation of the bark and leaves, mixed with cummin seed, sugar

C. lanceolata, Rord , Wall , W & A (but not of Forskhal), also

Burma to Ceylon and Malacca

and milk, is given in virulent gonorrhoea (Balfour).

C. lanceolata, Neclour, see C acutiloha, Delile

C. 771

[C. angustifolia, Vahl]

MEDICINE Bark 220

| CASSIA obovata. | Country or Italian and Jamaica Senna. |
|-------------------------|--|
| 772 | Cassia lanceolata, Forskhal |
| | This species is, by the majority of authors, wewed as quite distinct from either C. acuttloin or C. arguetion. It is a native of Arabia and doubtless to a certain extent is used as a substitute or adulterain for the Mecca senna. It differs chergly from C. acuttloia in having glandular petiolets, the plants are, however, very nearly allied, and, as Forskhal; description in antenior to Delile's account of C. acuttloia, both might be reduced to one, which in that case would have to receive the name C. lanceolata, Forskhal, but in the writer's op nion incorrectly, as a synonym for C. angustifolia, Vahl |
| 773 | C. Lignea See Cinnamomum Tamala, Nees, LAURINEE. C. marginata, Roxb, Fl Br Ind, II, 262, Wight, Ill, t 83 |
| | Syn — C ROYSURGHI DC Vettn — Urimidi ushiamen, Tet, Ngoomee, BURM, Ratoo-waa Sino References — Royb M Ind Ed CBC, 350 DC Prod II 450, W &A Prod 236 Gamble, Man Timb, 137, Thwaites, En Ceylon Pl, 95 Bedd, Fl Sylv, 1 180 |
| | Habitat — A small deciduous tree, with deeply cracked brown bark, found in the Western Peninsula, and in Madras Ceylon and Burma (Thoungyeen forests) |
| TIMBER 774 | Structure of the Wood Heartwood light brown very hard. The wood is well adapted for turning, naves of wheels, and handles of tools |
| 775 | C. mimosoides, Linn , Fl Br Ind , II , 266 |
| | Vern —Patwa ghas, SANTAL |
| | Habitat—Grows on the Himalaya, ascending 5 000 to 6 000 feet in Kumaon, and on the bills of Bengal and of the Khasia, to Ceylon and Malacca Medicine—§" Root given for spasms in the stomach Rev A Campbell, |
| MEDICINE Root 776 | Santal Mission, Pachamba) |
| 777 | C. nodosa, Ham, Fl Br Ind, II 26t Vern—Gnu-theng, Busm References—Mass v. 8 Burm, 404, 770 |
| | Habitat A common species in the Eastern Himalays, Manipur, and |
| | Burma It has the properties assigned to most of the wild species |
| 778 | C. obovata, Colladon, Fl Br Ind, II, 264; Wight, Ic, 1 575 |
| 77- | Syn - Cassia senna Linn , 'Senna obtusa, Rorb |
| | Known in India as Country Senna, and as Italian, Tripoli, and Jamaica Senna, from its being one of the first species made known to Europe, it was cultivated in Italy during the |
| | 16th century Vern—Phin Tarwar, BOMS References—Row's F1 Ind (F1 C B C) 352 W and A Prol 288 Modern Sherry Supp Pharm Ind , or in part, Flick are Mind of the part of the state of the s |
| | Habitat —The Western P.a nsula, Mysore and South India, especially the Coromandel coast A small shrub, with the leaves smaller (leaf |
| | C. 778 |

Negro Coffee,

CASSIA occidentalis

lets 3-6 pairs) than in C Burmanul, and the pods not near so prominently tubercled over the seeds as in that species

The writer is b) no means certain that he is correct in regarding the

MEDICINE Leaves 779

780

MEDICINE

eaves

78I

Root

782

dran Senna being used as an adulteration in the commercial article. This habit has now for some time been discontinued, as also the cultivation of the plant (Conf. with C. Burmanui).

Cassia occidentalis, Linn , Fl Br Ind , II , 262

THE NEGRO COFFEE

Vetn - Lasonde bare kasonde or kesunda HIND and DUK, Hikal, BOMB, Kasamara Sans Kelkashunda, BENG, Nettam takaras,

Habitat —A diffuse, sub-glabrous under shrub, scattered from the Himalaya to the Western Peninsula, Bengal, South India, and Burma to Ceylon Probably introduced Distribution cosmopolitan in the tropics

Medicine —The Leaves, ROOTS, and Speps are used medicinally, and by Hindu and Muhammadan writers they are supposed to have the same properties as Combana The Market Combana The Market

properties as C Sonhara Tho # 1 sion of c In the I

are emp the form the root

Ina I I

various po 0 3 10112 delion is said to destroy the purgative principle in the seeds and make them taste like coffee The whole plant is purgative 100se of the leaves about 90 grains "(Dr. Dymock Mat Med W Ind) "In the West Ind es the ROOT is considered duretic, and the leaves,

taken internally and applied externally, are given in cases of itch and other cutaneous diseases, both to men and animals. The negroes apply a plaster. The root is

of the stomach, and in

has analysed the seeds curso

222

CASSIA occidentalis

Negro Coffee

MEDICINE

previously treated with ether, by means of alcohol of 60 per cent, the alcohol is distilled off, the syrupy residue treated with absolute alcohol.

of various bodies) It is soluble also in weak alcohol, and in acids and alkalies. The colour cannot be fixed upon tissues by any known mordant. This circumstance induced the author to term it achrosine, or 'not colour in a 'although being coloured treelf'.

Special Opinions—"Leaves pounded and made into a paste are applied to fresh wounds to bring on the r healing by first intention."

(Assistant Surgeon Anund Chunder Mukarji, Noakhali)

"The mature the treatment

FOOD Seeds 784 NEGRO

the early part of the year a sample of an article imported at the port of Liverpool from Bathurst, River Gambia, under the above name. They were identified at Kew as the seeds of Casua occidentalis. According to Livingstone, these are used under the name of *Phériquos seeds' on the Zambesi as a substitute for coffee. Monteiro, however, states in his 'Angola and the River Congo' (Vol. II., p. 299) that *Fedgoas seeds are used only medicinally as a substitute for quinnine. The seeds are coasted and ground, and ther infusion taken either alone or generally

mixed with coffee " (1877, p. 39)
"These seeds occasionally find their way into the European market
The following them a let are from the Nobells of Dominical dated.

native plant as coffee, but it is only lately that I have enquired into the

for our good coffee Afterwards some of the seeds roasted and ground were brought to me, and the aroma was equal to that of the coffee ordinarily used in the island

"I intend to send you a good quantity of the 'egfs marron' in its stages of preparation, in order that you may have an opportunity of undergoing my experience, and alterwards, you will I think be willing to raise Cassia occidentalia above the rank of a weed I may inform you that the plant itself is used by the native 'doctors' medicinally in the

| Kasondi Senna | CASSIA Sophora. |
|---|-----------------------------------|
| form of a de I will enquir report the ri to the sugar , | FOOD |
| in large quantities" (1881, pp. 34-35) Cassia Oil. See Cinnamomus zeylanicum. C. siamea, Lomk, Fl. Br. Ind., II., 264 Syn — C. Fiorido, Vald. Sinna Sumatrana, Roch Vera — Assiod Bons. Beat: manye konne, Tam., Sime tangadi, Kan., Bas, Sino., Maisalee, Birn. Ref. — | 785 |
| Habitat —A moderate-sized tree, with smooth bank, found in South India, Burma, and Ceylon Distributed to the Malayan Peninsula and Siam Structure of the Wood —Sapwood whitish, rather large Heartwood | 1 |
| C. Sophora, Linn, Fl Br Ind, II, 262 Syn — Senna Sophera and S escuenta, Roed; C chinensis, Jacq. Senna purpurea, Roed | |
| Vetth.—Baner basunda bas is basenda, Histo, Kal bashanda, Bando, Sarshasinda, pangli tolda, Dur, Kuwadare, Guj, Ran halasah, Mar, Ponnéareza perpa tabaraz, pirérura Tam, Paul tangdal nati kashindha, kasa madahasham, tagara chettu, Tat., Ponnam tabara, blata, hasamarda, Sans, Ora tora, Singu, Tat., Ponnam References—D. 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | i I |
| Medicine —The Bark, Frayes, and Seed as a cathartic, and the Juice of the leaves is viewed as a specificint ring worm, specially when made into a plaster in combination with sandal-wood. A paste made from the root is sometimes used instead of the juice of the leaves. The powdered seed is used for the same purpose and also for itch. The Sanskrii name menas "destroyer of cough, it is supposed by Hindus to have lor smale." In the fore guen in d and leave. The of Daine, | MEDICINE Bark 788 Leaves |
| C. 791 | I |

| CASSIA Tora. | The Fœtid Cassia |
|-----------------|---|
| CHEMISTRY | Chemical Composition—"This plant, like several others of the same genus, owes its medicinal activity to the presence of chrysophanic acid, sometimes called Rhein, form (L.H.Q.)" (OH i) This substance belongs to the lanthracene group of carbon compounds, and, like alizarin, is regarded as dioxyan thraquinone, C.i.H.Q. (Fill.) It crystallizes in six stded prisms, is tasteless, and may be sublimed without decomposition, it is contained in Goa powder (50 per cent) rhubarh, most varieties of dock, Lichen orcella, Permetia parietina, Cossia alata, C occidentitis, C Tora, |
| | |

and Vaseline, dissolve readily ontaining 52 per cent the fixed oils, a considerable tments direct from Araroba ice, yielding the acid after re c

```
Food - The leaves are caten by men and animals" (Atkinson)
FOOD
Leaves
           The disagreeable smell is removed by boiling
 792
```

Cassia, sp (?) 793

Major Ford sent from the Andaman Islands, in 1866, a sample of a hard, durable wood, olive brown, with a structure very similar to that of Ougeinia dalbergioides Evidently some common Andaman wood, and known by the name of Gnugyi (Gamble, Man Timb)

704

795

TIMBER

706

797

C timoriensis, DC, Fl Br Ind, II, 265 Vern -Arremene, SING , Toung maisalee, BURM

References -Kurs, For Fl Burm, 393, Gamble, Man Timb, 138, Thwaites, En Ceylon Pl , 96

Habitat -A handsome, small, evergreen tree, met with in Burma and Ceylon Structure of the Wood -Dark brown, nearly black, resembling that of

C siamea, used in Ceylon for building and furniture C. Tora, Linn , Fl Br Ind , II , 263

THE FIETID CASSIA Very - Chakunda panerar, HIND and Beng Chak oda arak , SANTAL Pawar, panwar, pawas, chakunda, PB , Panwar, N W P , Takdid

C. 797

CASSIA The Feetid Cassia Tora. tarota takla, tanklı MAR Kanarıo, kotarıya, Guj , Tankala, kotarıa, Re' and lans of beng, 124 142 Lisona, v 11 of Domo, 153, 140, 243, 201; Balfour, Czclop, Wardle, Report on Dyes & Tans of India Habitat -A gregarious annual under shrub, from 1 to 2 feet in height, found everywhere in Bengal, and widely spread and abundant throughout the tropical parts of India Dye -Baden Powell, Atkinson, and other writers say that the seeds ٠.

a species of Rhammus, The use of Cassia seeds

l chemical examination, tini 1. Aatu e, wine evanning the ayes of India, had occasion to try the seeds of this plant, and found that they afforded a most useful yellow die suitable for tasar silk Mr. Wardle does not appear have investigated the question of their special property, if any, of being used along with indigo, but from his results it is natural to infer that they would produce a green shade with indigo instead of assisting the blue

| filiformis | |
|---|--|
| MEDICINE Leaves. 790 Seeds. 800 | Medicine The veryre are used as an anamont hath ruly reard |
| ł | . " |
| | - control for and mast on the time and all all and entering in the |
| Root 801 | : |
| } | |
| (| |
| } | rubbed on a stone with lime-juice, the Vytians suppose to be one of the |
| ł | 'ayes of a Cassia shrub common in in dhobie's itch'' (Deputy Surgeon- |
| (| |
| FOOD | • |
| Seeds. 802 | PO 1 to to the state of a Do to Dominion and analysis |
| Eoffee substitute. 803 | |
| Leaves. 804 | pot-herb, both leaves and frust (Campbell). "The seeds are said to yield a decoction which is reported to be in every respect as good as office" (Br. C. D. Hardinge, Rangoon) "A kind of coffice is made from this in Atracan" (Prof. Romanis, Rangoon). Cassis, see Phibes zigrume. |
| | · - |
| 000 | CASSYTHA, Linn; Gen. Pl., III, 164. |
| 805 | Cassytha filiformis, Linn; Fl. Br. Ind, V., 188; Wight, Ic., 1.1847; |
| | |
| | |
| 1 | |
| | C. 805 |

Sweet or Spanish Chestnut

CASTANEA vulgaris.

-which India r parts trabia,

MEDICINE.

natives in a vapour bath for eing placed under the bed" Pindi, Panjab) "Sanskrit

and regard it as possessing the property of increasing the secretion of semen " (U C Dutt, Civil Medical Officer, Serampore) Domestic -"A portion of the plant is by the Santal tied round the

neck, arm, and ancles, as a cure for rickets" (Rev A Campbell, Report, Chutta Nagpur)

DOMESTIC. Charm. 807 808

CASTANEA, Garin , Gen Pl , III , 409

FERE Castanea vulgaris, Lam , DC Prodr , xvi , 2, 114, 683, Cupuli-

THE SWEET CHESTAUT OF SPANISH CHESTAUT, CHATAIGNIER, Fr , EDELKASTANIE, Germ

Syn.-C VESCA, Gartn

References -Brandis, For Fl , 491 , Gamble, Man Timb , 379 , DC , On gin of Cult Pl , 353 , Smith, Dic , 110

Habitat -" A large, long-lived, deciduous tree, of rapid growth, more rapid than the oak, introduced in the Himálaya, and grown in various localities, and especially in a large number of places in the Panjab and the hills of the North-West Provinces, in Darning, and the Khasia Hills ' (Gamble)

Cultivation -" It has been sown or planted in several parts of the CULTIVATION

800

state of the species" (DeCandolle, Orig Cult P1)
Food—The nuts are esten When ground into meal they form an important article of food for the poor Mr Atkinson says the tree was introduced by Sir John Strachey in Kumaon, and in Dehra by Dr.

FOOD. 810

TIMBER. 811

| CASTANOPSIS | |
|--------------|--|
| tribuloides. | |

FOOD.

815

FOOD. 816 TIMBER. 817

8t8

Probable New Tanning Material for India.

sigorously, along the Vosges it is grown for vineyard poles, in Kent and Sussex for hop poles" (Brandis)

CASTANOPSIS, Spach , Gen Pl , III , 409

Chairing Sia, Space, Gen Fi, 111, 409

812 Castanopsis indica, Alph DC, Prodr, XVI, 2, 109, CUPULIVERE

.

References — Brandss, For Fl , 490 , Gamble, Man Timb , 358 , Kurs, For.
Fl , Burm , 498 , Balfour, Cyclop

both in

largely

813 TIMBER 814 and the branches burnt for manure.

Cyclop

C. rufescens, Hook f. & Th , Gamble, Man Timb , 389
Vern -Dainé katés, Nepal , Sirikishu, Lepona , Hingori, Ass

Habitat.—A very large evergreen tree of Sikkim Himalaya, from

C. tribuloides, Alph DC, Prodr. XVI, 2, III, Wight, Ic, 1 770

Bunn References. - Gamble, Man. Timb , 380 ; Brandis, For Fl , 490 ; Balfour,

Structure of the Wood --Grey, moderately hard. Annual rings marked by darker lines Used for planking and shingles, being good and durable.

C. 820

FOOD SIO TIMBER 820 The Bay Chestnut The Ule Tree

CASTILLOA elastica.

The tree coppies admirably and with Castanopsis indica, Quercus spicata, and Engelhardua might be grown on the hills wherever firewood and charoul forests are required

CASTANOSPERMUM, A Cunn, Gen Pl, I, 556

"A genus of plants so named in consequence of the supposed resemblance of the seeds to the sweet chestnuts of Europe

Castanospermum australe, A Cunn , Leguminosæ

THE MORETON BAY CHESTNUT

References - Drury, U Pl 124 Balfour, Cyclop, Smith, Dic, 110 Treasury of Botany 821

FOOD. 822 TIMBER 823

CASTILLOA, Cero, Gen Pl, III, 372

Castilloa elastica, Cerv , URTICACEE

THE ULK TREE

References.—Brandis, For Fl., 427, Kurs For Fl., Burm., II., 419; Smith Dic., 87, 89, 59000 Encyclop., 1659-61 Reports of Bot Gar dens Nilgur Hills, for 1881-82, 1882-83, and 1885-86

Habitat—A lofty forest tree of the Bread fruit family, native of America, lately introduced into Ceylon and some parts of India In Kem Report for 1871, p 15,18 given an account of the attempts made to introduce this plant into India Burma, Assam, Ceylon and the lower slopes of the Nilgiris have now been pronounced as suitable for its cultivation.

Mr Lawson reports of the Nilgin plants "In these days of uncertain coffee crops and low prices, planters are anyous to cultivate any plant

824

because we have not yet learnt how to tap the trees properly "
Gum —The tree evudes, on tapping, a miky jurce which, when thickened, forms what is called the Central American rubber In some coun-

GUN

of the ju ce of Ipomæa bona-nox

For further particulars of this gum see under "India rubber"

Castor Oil, see Ricinus communis, Linn, Eurhorbiacen

C. 825

vigorously, along the Vosges it is grown for vineyard poles, in Kent and

CASTANOPSIS, Spach, Gen Pl, 111, 400

Several species of this genus are met with on the mountains of Eastern India, but none are reported to be used for tanning. This is probably an oversight, since the European members possess this property to a considerable extent. Castanca vesca containing 1110 20 per cent of tannic

Sussex for hop poles" (Brandis)

CASTANOPSIS

tribuloides

acid

| 812 | Castanopsis indica, Alph DC, Prodr, XVI, 2, 109, CUPULIFERE |
|------------------------------|--|
| | Syn -Castanea indica Roxb, Fl Ind Ed CB C, 674 Kurs, 11, 478; |
| | Ve Cha khya, |
| i | References Brandis For Fl , 490 , Garible, Man Timb , 388 Kurs For Fl , Burm , 48 ; Balfour Cyclop |
| 1 | |
| FOOD 813 TIMBER 814 | and the branches burnt for manure |
| 815 | C. rufescens, Hook f & Th., Gamble, Man. Timb., 389 Vern — Daink katus Nepal., Sunkishu Leecha, Hingon, Ass Habitat — A very large evergreen tree of Sikkim Himálaja, from |
| FOOD. | |
| 816 | |
| TIMBER 817 | 1 |
| | |
| | |
| 818 | C. tribuloides, Alph DC, Prodr, XVI, 2, III, Wight, Ic, 1 770 |
| 610 | Syn - Castanea Tribuloides, Kurs (u , 480), Quercus Ferox and Q |
| | Vern - Túmari katoni Kumaon Musré katus kotur, chisi maku, |
| | shingali Nepal, Bar hingori, kanta singar, Ass Dingsaot, Khasia, Singhara, Tipperah, Kanta lal batana, Chittagong, Kyantsa, |
| | Burn References Gamble, Man Timb , 389 , Brandis For Fl , 490 ; Balfour, |
| | Cyclop |
| | |
| | 1 |
| F00D 810 | Structure of the Wood -Grey, moderately hard Annual rings |
| TIMBER 820 | marked by darker lines Used for planking and shingles being good and durable |
| | C 820 |

The Bay Chestaut. The Ule Tree.

CASTILLOA elastica.

The tree coppices admirably, and with Castanopsis indica, Quercus spicata, and Eppelhardta might be grown on the hills wherever firewood and charcoal forests are required

CASTANOSPERMUM, A. Cunn : Gen Pl. I. 556

"A cenus of plants so named in consequence of the supposed resemblance of the seeds to the sweet chestnuts of Europe

Castanospermum australe, A. Cunn , Leguninose

THE MORETON BAY CHESTNUT

References - Drury, U. Pl., 124. Ballour, Cyclon., Smith. Dic., 110. Treasury of Bolany

Habitat ~A tree of the sub-tropical regions of Australia, occasionally planted for ornament, introduced into India about thirty years ago Food -The seeds are eaten by the natives of Australia, but are un-

palatable to Europeans (Smith) Structure of the Wood - White, with a yellowish tinge, hard

CASTILLOA, Cerv . Gen Pl . III . 372

Castilloa elastica, Cerv , URTICACEÆ

THE ULE TREE

Refetences.—Brandis, For Fl, 427 Kurz, For Fl, Burm, II, 419; Smith, Dic, 83, 89 Spont Encyclop, 1059-61 Reports of Bot Gar dens, Nulpir Hills, for 1831-82, 1832-82, and 1838-80

Habitat -- A lofty forest tree of the Bread fruit family, native of America, lately introduced into Ceylon and some parts of India In Kew Report for 1877, p 15, is given an account of the attempts made to introduce this plant into India Burma, Assam, Ceylon, and the lower slopes of the Nilgiris have now been pronounced as suitable for its cultivation

Mr Lawson reports of the N !~

coffee crops and low pr that will return a small ir

local ties in the Wynaad

suit the Castillea, and vator" Colonel Came

Cal cut "It has been

thope they

this place

either from because we

Gum enol f -

For further particulars of this gum see under "India rubber"

Castor Oil, see Ricious communis, Linn, Eurhorbiaces

C. 825

H 100 md 4 a val

82T

FOOD. 822 TIMBER 823

824

CASHARINA equisetifolia.

Reefwood of Australia.

CASUARINA, Forst , Gen Pl , III , 402.

826

Casuarina equisetifolia, Forst : DC Prodr , XVI . 2, 228 : CASU-

THE BEEFWOOD OF AUSTRALIA. FARINACEÆ.

Svn -C MURICATA, Roxb . Fl Ind , Ed C B C . 623

Vern .- Jangle sare, HIND , Jau, BENG , Vilayatisare, wilayati saru, saroka jhar, Bohb , Jurijur, mujjun, Sind , Sarpuhala, sarova, suru,

tions, Conf with Tamarix.

**hoa 178

Habitat -A large, evergreen tree, with leafless, drooping branches

CULTIVATION 827

the vernacular names of that plant

Cultivation -" It has been largely planted in North Arcot, South Arcot, Madras, and other districts of the Madras Presidency, for fuel, for which it is excellent, but it requires to be near the sea-coast and to have water at the roots, at least 10 feet from the surface of the ground Trees planted in sandy soil often suffer much from drought the first two or three years, the tap-root then finds its way down to about to feet, and reaching water the tree begins to thrive It is of course best near the sea, but fire trees may be seen in places in Northern India, especially at Saharanpur and Amballa" (Gamble)

The Ma cost of culti put down a

gross capital

of R 181

and in the eighth or ninth year the land may be cleared, the remaining trees, at the lowest estimate, after paying all expenses on the same, would realize R600

GUM. 828 829

Gum .- Reported to yield a good resin Dye.—The bark is used in tanning (Birdwood, Bomb Prod., and Bids., Mad Est List for 1855) A brown dye is extracted from it according to Balfour. Mr. Wardle remarks "The bark contains a small. quantity of colouring matter, and produces in dyeing light reddish drab colours on each of the fabrics on which I have experimented" He further adds. "The shades produced by this dye-stuff are very good

| Cedrelas or Toon woods | CEDRELA. |
|--|------------------|
| though faint, but the dye-stuff contains too small an amount of colouring matter to be of any great value in the dye house. Lisboa says that it is used in Bombay as a mordant | DYE |
| Medicane — The bark is slightly astringent, and is employed in infusion as a tonic, according to Dr Gibson it is an excellent and at the same time a readily available astringent, useful in the treatment of chronic | MEDICINE. 830 |
| e, very hard, cut, weigh pice well, and tremely quick uportant trees wood is used | |
| for fires, as it burns readily, and the ashes retain the heat for a long time. It is much valued for steam engues, ovens, &c. "(Treasury of Bateny). Clubs made of the hard wood are used in Fiji for heating the bark of the Paper Mulbfray (Broussonetia papprifers, Vent.) for the manufacture of Tapa cloth (Arm Official Guide to Museums, 122). The natives of Australia make their war-clubs from this wood (Smith). Domestic Uses—"The burnt ash is made into soap" (Smith). | DOMESTIC |
| Catechu, see- | 832 |
| [A 139] (a) Acacia Catechu, Willd, Leguminosæ (black catechu) (b) Uncaria Gambier, Robb, Rubiackæ (pale catechu) [A 1298] (c) Areac Catechu, Lunn, Palmæ (palm catechu) | |
| Cattle and Buffaloes see Oxen | 1 |
| Cat, Civet, see Tigers and Panthers. | 1 |
| Catha. Several species exist in India, but by the Flora of British India they have been all reduced to Celastrus, which see | ¹ . |
| Catha edulis yields the Kat or Kafter of the Arabs, the leaves of which if chewed are said to prevent sleep Sometimes imported into India, largely so to Aden, where they are used as a substitute for Tea. | 833 |
| Cat's-eyes, see Chalcedony. | i |
| Cat's-skins, see Skus. | l |
| Cauliflower and Brocoli, see Brassica (oleracea) botrytis, B 851 | 1 |
| Caustic Potash, sec Potassium, also Carbonate of Potash, C. 527. |] |
| Caustic Soda, see Sodium, also Carbonate of Soda. | l |
| CEDRELA, Linn, Gen Pl, I, 339 | 834 |

reço to d the r.

pass branches, from which when in flower a paniele three or four feet long is suspended. This is the characteristic form of the North-Western Himá laja at allitudes from 4,000 to 8 000 feet. It frequents damp shady streamlets, growing so gregariously as to exclude all other trees.

CEDRELA serrata.

The Toon woods.

In the Monograph of the Meliaceæ published in 1878 by Casimir de Candolle, the species of Cedrela formerly grouped under the one head of Cedrela Toona, Roxb, have been separately described.

They are thus distinguished -

Ovary glabrous-

Leaflets petioled

Ovary hairy-Leaflets acute at the base

Leaffets subsessile Leaffers round at the base C. serrata, Royle C glabra, C de Cand

C. Toona, Roxb C microcarpa, C de Cand

Mr Gamble, in his Manual of Timbers, XII, remarks that in his "Trees, Shrubs, and Climbers of the Darjiling District, three varieties were spoken of and separated as tollows -

ber-December, bark I ght-es, found in the upper hills

"No t is C. Toona, Rorb. No 2 probably C microcarpa, C de Cand., No 3 probably C. glabra, C de Cand. It would, however, have probably been better to describe No 1 as 'deciduous in the cold season, and Nos 2 and 3 as 'deciduous in the rains' There is perhaps a fifth species

"They may also be distinguished as follows by the capsule -scapsule round C. Toons.

Capsule smooth C microcarpa long, pointed Capsule covered with corky tubercles

C glabra. "Of the Northern Bengal specimens which we have examined, E 360 To the Northern Bengai specimens while E 655, E 2332, L 2509, E 2619 and E 2323 will be C glabra, while E 655, E 2322, L 2509, E 3619 and E 3623 will be C microcarpa. Some of the Assam, Chittagong, and

ooo feet, is probably C multijuga, RM , Nee, KAREN (Trade name,

It has a light, soft, pink wood, with the usual characteristic scent strongly perceptible, and structure resembling that of the other species of Toon, the pores being perhaps

> cepted as indicating i microcarpa, DC, as

835

Cedrela serrata, Royle; Ill, p 144, 1 25; Monog, DC, I, 742, MELITCER

Svn _C Toons, Roxb (Hook, Fl Ind , 1,558 an pari) Vern -Draws, dalli, dal, daurs, khishing, khinam, N.-W. H. CINUMBER - sengen t

TIMBER

large pores,

. . 20

| The Toon woods. | CEDRELA Toona |
|---|-----------------------------------|
| Domestic Uses —Used about Simla, for the hoops for sieves for bridges, and for many such purposes. The shoots and leaves are lopped for cattle fodder | BOMESTIC 837 FODDER. 838 |
| Cedrela Toona, Roxb, Fl Br. Ind, I, 568, Wight, Ic, 1 161. | 1 |
| THE TOON OF INDIAN MAHOGANY TREE, MOULMEIN CEDAR. | } |

the state of the s

BURM References - Roxb , Fl Int , Ed CBC , 213 633 , Brandis For

Gum -It yields a resinous gum, of which little is known at present M Nees von Essenbeck has published an account of some experiments with the bark, which indicate the presence in it of a resinous GUM. 839

DYE Flowers 840 Seeds.

[&]quot;It was a commoner practice under native rulers than it appears to be now to wear bisanti-coloured clothes in the spring, whence its name bisant' or spring time Safflower and tun are combined in Tirwa Dr. McCann

CEDRELA serrata

The Toon woods

In the Monograph of the Meliaceæ published in 1878 by Casimir de Candolle, the species of Cedrela formerly grouped under the one head of Cedrela Toona, Roxb . have been separately described.

They are thus distinguished -

Ovary glabrous-

Leaflets petioled Leaflets subsessile

C serrata, Royle C glabra, C de Cand

Ovary hairy-Leaflets acute at the base

C Toona Roxb

Leaflets round at the base Mr Gamble, in his Manual of Timbers XII, remarks that in his

C microcarpa, C de Cand

"Trees, Shrubs, and Climbers of the Darjiling District, three varieties were spoken-of and separated as tollows -No . Dand o s flove and M anh f

N

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"They may also be distinguished as follows by the capsule capsule round

Capsule smooth

Toons. C microcarpa

long pointed Capsule covered with corky tubercles

"Of the Northern Bengal specimens which we have examined, E 360 and E 333 will be C glabra, while E 655 L 2332, E 3509 E 3619 and E 3623 will be C nucrocarpa Some of the Assam, Chittagong, and Burma specimens are probably C nucrocarpa

"No B 3378 from the Salueen, 2 000 feet, is probably C multijugu, Kurs. 1, 229 - Vern Toungdama, BURM, Nee, LAREN (Trade name, like the other Toon woods, Thirthtado) It has a light, soft, pink wood, with the usual characteristic scent strongly perceptible, and structure resembling that of the other species of Toon, the pores being perhaps more scantily distributed Weight 35 5lb per cub c foot"

The preceding remarks may for the present be accepted as ind cating the Nepal plant, C glabra, DC, and the Sikkim C racrocarpa, DC, as distinct from the following —

835

Cedrela serrata, Royle; Ill, p 144, t 25, Monog, DC, I, 742, MELLACEÆ

Syn -C Toona, Roxb (Hook, Fl Ind , 1 568, sn part) Vern -Draws, dalls, dall, dours, khishing, khinam, N W H ** * * *

TIMBER 836

large pores.

| T | he Too | n w | pods | i. | | | | ŀ |
|---|--------|-----|------|----|---|------|---|----|
| | | | | | _ | | | 1- |
| | | _ | | | | | , | î. |

CEDRELA Toona DOMESTIC 837

838

Domestic Uses -Used about Simla, for the hoops for sieves for bridges, and for many such purposes The shoots and leaves are lopped FODDER for cattle fodder

Cedrela Toona, Rosh , Fl Br Ind , I , 568 , Wight, Ic , t 161

THE TOON OF INDIAN MAHOGANY TREE, MOULMEIN CEDAR. Vern -Tun, tunt, lim maha nim, maha limbo tunka jhar, tuna, lud,

BURM

References - Roxb, Fl Ind Fd CBC, 213 633, Brandis, For

Auns o Derg 14, Duce Lyes and Lans, 19-11 1, 25, 25 bird wood, Bomb Prod, 375 Lisboa U Pl Bomb 45, 24, 258 Balfour, Cyclop Treasury of Bot Kew Cat, 29 Fleming & Med Pl and Drugs in As Socy Res., Vol XI, 163, Med Top, 1X, 93

Habitat -A large tree, about 50 to 60 feet in height, growing in the tropical Himalaya from the Indus eastward, and throughout the hilly districts of Central and South India to Burma, ascending to 3,000 feet in the N -W Himalaya and in Sikhim (?) to 7,000 feet Distributed to Java and Australia

Gum -It yields a resinous gum, of which little is known at present M Nees von Essenbeck has published an account of some experiments with the bark, which indicate the presence in it of a resinous astringent matter, a brown astringent gum and a gummy brown extract. ive matter, resembling Ulmine (Bilfour)

Dye -The flowers yield a red and a yellow dye (in Bengal generally known as Gulnari) said to be ad must be to a small extent onl

Madras dyes sent to Paris

which is known as basants in the mostle-west provinces. It is fleeting ! and apparently only used by the poorer classes. In Burma it is used in conjunction with safflower. Ser E. Buck, in his Report on the Dye-stuffs,

c co pir cu ill 111 Wd

of Can opore is produ " It was a commoner to wear bisanti-colour or spring time Saffle .

DYE. Flowers 840 Seeds. 841

GUM.

830

Dr. McCann I

| 234 | Dictionary of the Economic |
|-------------------------|--|
| CEDRELA Toona. | The Toon-woods: Monlmein Cedar |
| DYE. | says the cloth previously dyed yellow is changed into red by the páreaten by Hindus. |
| MEDICINE Bark 842 | uset b |
| | .∴ Dr |
| Flowers | extract of the bark in chronic infantile disentery. Blume attributes valuable antiperodic virtues to it, and in this character it is favourably noticed by Dr J Kennedy (Ann of Med, 1796, Vol I, p. 387). Dr Æ Ross speaks of it as a reliable antiperiodic, and Dr J Newton as a good substitute for enchona. The dose of the dned bark is about an ounce daily in the form of infusion. The powder of the bark was found by Dr Kennedy to be of great service as a local astringent application in various forms of ulceration. According to Dr Dymock, the native physicians use the bark in combination with bonduc nuts as a tonic and |
| 843 | antiperiodic, a fact also mentioned by Ainstie in his Materia Indica. The Frowers are called Gul-tun in Bombay and considered emmenagogue "The bark was used in Java by Blume in epidemic fevers, diarrhea, and other complaints. Horsefield gave it in dysentery, but only in the last state, when inflammatory symptoms had disappeared." (Bulfour) |
| F00D 844 | Food —The seeds are used to feed cattle The young shoots and leaves are lopped as cattle fodder. |
| TIMBER 845 | Structure of the Wood—Brick-red, soft, shining, even but open grained, fragrant, seasons readily, does not split nor warp. Annual rings distinctly marked by a belt of large and numerous pores. It is durable and is not eaten by white ants, is highly valued and universally used for furniture of all kinds, and is also employed for door-panels and carving Trom Burma it is exported under the name |
| Price | . " |
| | |
| | a real trace of |
| | · |
| | |
| | , |
| | and is used in ent cases It or many other purposes |
| | C. 845 |

| The Deodar or Himalayan Cedar. | Deodara. |
|---|----------|
| | 7 |
| CEDRUS, Loud, Gen Pl, III, 93 |) |
| Cedrus Deodara, Loudon , DC Prodr , XVI , 2, 409 | 846 |
| DEODAR HIMÁLAIAN CEDAR. | 1 |
| Syn,-Pints Deodars, Rash, Fl Ind , Ed C B C , 677 | 1 |

Vern - Lilan ka-per, kilan deodar, Hind , Deadar, geyar, keli, kelu,

hinds, masktar PEBS References — Brandis, For Fl. 516, Gamble, Man I, mb., 400, Stewart, Ph. Pl. Sherif 296 D

Dispen 410, 4 Dist, four, Irvine, 28

Habitat —A very large and tall tree, found in the North-West Himalaya, between 4000 and 10000 feet, extending east to the Dauli river (a tributary of the Alaknanda below the Niti Pass), in the mountains of Afghanistan and in North Belochistan

Gum —It yields a true oleo-resin, called Kelon-ka-tel The preparation of this oleo resin is thus described by Mr Baden Powell —

or this older term is the descripted by Mr. Baden Powell.

First, an earthen gharm, or vessel with a wide mouth, and capable of containing about 4 seers, is sunk into the ground. Next, a large gharm of about 12 seers capacity is taken, and three small holes are dilled in its under side, it is then filled with scraps of the pine wood, and the property of the pine wood, and the strength of the pine wood,

gum 847

wood yields about 26

cattaks of tar and 4'3 chitaks of charcoal To procure a seer of tar stocharge the pot, and 2 maunds (Pb Prod., 4rc) wood by destructive distillation,

anoining the inflated skins which are used for crossing rivers, and as a

CEDRUS Deodara.

The Deodar or Himalayan Cedar.

remedy for ulcers and eruptions, for mange in horses and sore feet in

cattle" (Gamble, 406)

MEDICINE

Medicine -The aromatic wood is employed medicinally as a carmi-

stomach could bear. Its use may be extended to other skin diseases with advantage Dr Royle states that the leaves and small twigs of the Deodara are also brought down to the plains, as they are supposed to possess mild terebinthenate properties (Plarm Ind) In Kangra the wood is pounded with water on a stone, and the paste applied to the temples to relieve headache Assistant Surgeon Sakharam Arjun describes the wood as a bitter stomachic, useful in fever, costiveness, piles, and

pulmonary complaints Food -The young shoots and plants are eagerly browsed by

goats, &c Structure of the Wood -Heartwood light-yellowish brown, scented, moderately hard In each annual ring the outer belt of firmer and

the edge of certain annual rings are frequently found concentric strings of dark-coloured pores or intercellular ducts, which are prominent on a vertical section as dark lines, and in the vicinity of which the wood is sometimes more resinous.

In common with most species of the Order, the Deod ir has well marked annual rings which, there is little, if any, reason to doubt, each repre-

> warm kes it from

lly be the practice to take only for use in any forests, the experiments made on But the experience we have trees in that or neighbouring localities

C. 850

FOOD 840 TIMBER.

The Oleum Nigrum.

CELASTRUS paniculata

851

852

853

854

inner Himálaya, having usually the age of trees 6 feet in girth above 140 years,

and—Those in the intermediate ranges and valleys, having 6 feet in girth for an age of between 110 and 140 years,

3rd—Those in the outer ranges under the full influence of the monsoon, and having the age of trees 6 feet in girth usually below 110 years.

Deedar wood is extremely durable, being by far the most durable of the woods of the Himálayan conifers. It is the chief timber of North-West India, and is used for all purposes of construction,—for railway sleepers, bridges, and even for furniture and shingles. (Gamble.)

CELASTRUS, Linn.; Gen Pl, I, 364.

The Flora of British India raised Wight and Arnott's sub-genera (1) EUCEL-STRUS and (3) OTA-OSPORIA to the Tank of genera. This was at first followed by the suthors of the Genera Flantarum, but subsequently (Vol. 1, page 997) was corrected back to the original position. The furner embraces some four species of unamed climbers, and the latter fil-

Celastrus emarginata, Willd ; CELASTRINES.

Syn — Gymnosporia emarginata, Reih, in Fi Br. Ind, T. 621, Celas Trus emarginata, W. and A. Prod., 160; Rexb, Fl. Ind, Ed CBC, 263, Catha emarginta, G Don.

C. oxyphylla, Wall.

Syn.-GYMNOSPORIA ACUMINATA, Hook. f.; Fl Br. Ind , I., 619

C. paniculata, Willd., Fl. Br. Ind., I., 617; Wight, Ic., 1. 158.

Black Oil; the Oleun Nigrim Plant.

Syn.—Celastrus alnifolia, Don.; C. Dependens, Wall.; C. Multiflora and nutans, Roxb

Vern.-Mal kangni, mál kungs, Hind., Sankhú, sankhis (leaves, kotaj.

na-young, Burm. The vern naires of Oleum Nigrum; Malkangni kajaniar, Duk, Valaluwa-failam, TAM, Malkangni fallami, IEL, References.—Rorb, Fl Ind, Ed CB.C, 200 Brandie For Fl 20

CELASTRUS paniculata

The Oleum Nigrum.

01L 855 Habitat —A scandent shrub of the outer Himálaya, from the Jhelum to Assam, ascending to 4,000 feet, Eastern Bengal, Behar, South India,

and Burma, in Ceylon it is common up to an elevation of 2,000 feet
Oil.—The SPEDS yield by expression a deep scarlet or yellow oil, used

medicinally. The time its odor turns of a dar

turns of a dar cation along v

Common shorter with a man and a man shorter in a small blue ga annas to

r for cattle

MEDICINE.

They are given in rheumat obtained from the seeds by externally This oil, under t forward by the late Dr He

When administered in doses of from ten to fifteen drops twice daily, its action as a powerful stimulant is generally followed in a few hours by free diaphorisis not attended by exhaustion [It is specially efficacious in

Seeds 857 aphrodisiacal and stimulant, useful both as an external and internal

Leaves 858

yenow and of the consistence of oil. The black oil manufactured at Vizagapatam and Masulipatam is the best. It is a good diuretic, dia-phoretic, and nervine stimulant. It is certainly the best remedy for beribers. I have seen many cases which did not benefit for weeks or months under the use of other medicines, but began to improve at once when this oil was employed. The first good effect of this medicine specified by the increase in the quantity of urine, and with this the dopsical effusion.

The Oleum Nigram

CELASTRUS senegalensis

patient except milk and bread-a restriction which is as injurious as un-

Food for Qualls.

patient is under this treatment he should eat meat roasted. I have seen I two or three cases of beri-bert cured by this treatment, and have also

diet, while using it, should consist exclusively of wheaten cakes and flesh of sheep" (Honorary Surgeon P Kinsley, Ganjam, Madras Presidency) "An oil extracted by heat is a specific in the treatment of beri-beri with marked success

Is a stimulant and diet should be ob

and milk, and no

among the people of the Northern Circars, especially of those of the malarious tracts" (Surgeon-Major E W. Levinge, Rajamundry, Godavery District). "Said to be useful as an aphrodisiac" (Surgeon-Major D. R. Thompson, Madras).

Structure of the Wood .- Pinkish yellow, soft.

Celastrus senegalensis, Lam.

5yn __^ 621 : Vera.khar haber

bedd. References.—Roxb. Fl Ind. Ed. C.B.C., 208. Brands, For. Fl. 81, Kurs, Fl Burm. 1, 353 Beddome, Fl. Sylvat., LXVI; Dalz. & Gibs., Bomb Fl. 48. Gamble, Man 1, 1mb, 87.

Habitat,-A profusely-armed tall shrub, common in the northern dry and intermediate zones of Central, South-Western, and North-Western India, distributed to Afghanistan, Central Asia, and Australia The

Flora of Brita! 1 1 comprises the leaves I

stems are r

Medicine -The Bank, ground to a paste and applied to the head, with

mustard oil, is said to destroy pediculi.

MEDICINE.

TIMBER.

ou, on the leaves smaller and

| 240 | Dictionary by the Economic | |
|--|--|--|
| CELOSIA argentea. | Celestite; Celosia | |
| 862 | Celastrus spinosus, Royle. | |
| | Syn — Gymnosporia Royleana, Wall, as in Fl Br Ind, 1, 62 Vern — Yaliddhar, Hind, Dsaral, Trans Indus, Kaudu, kandiari, kander, idép, baléki, lei II, phupari, badlo, kadew Kura, bagruwila darum, gwála darum, N - W P | kamla ar, Ps |
| | References—Boss, Fl. Orsent, II., 11 Brandss, For Fl. 80. Man Timb, 86, Baden Powell, Pb. Prod., 582, Stewart, Pb F Habitat—A thorny, distorted bush, abundant on the outer Western Himálaya (Kumaon and Garwhal, altitude 1,000 to 4,3 | North |
| | and distributed to the Concan and thence to Afghamstan, commo | n on the |
| MEDICINE Seed | | to be |
| 863 TIMBER | '' ' | ained, on as a |
| 864 | possible substitute for boxwood, for carving and engraving Powell remarks that it is used in the Panjáb for walking-sticks, | Bader |
| 865 | Celery. See Apium graveolens, Linn, UMBELLIFERE | |
| Bombay | CELESTITE; Mallet, Mineralogy, 141. | |
| 866 | Celestite or Celestine is a natural mineral, found in rhoi | upic or |
| Punjab 867 | | |
| | the Salt Range | |
| | CELOSIA, Linn, Gen Pl, III, 24. | |
| | For botanical characters of the genus see under Amarantaceæ (A. | 914). |
| | The name is derived from kelos, burnt, in reference to the colou flowers in the common garden species | |
| 868 | Celosia argentea, Linn, Fl Br. Ind, IV., 714, AMARANT | CEÆ |
| | Verm—Debbat, sufrad mergha, arreori, linvo Sirgut arab. Saraali suffar, acity Lapad, Guy, Kudah, karain Boona Karad karada Mus. Japathe chellu, Tet. 1 Kirri handa, Sino Several of these ve names umby white-cock sevens | hil, sil, Sind; Surugu, macular |
| | Re | |
| | | |
| MEDICINE Seeds 860 GII 870 FOOD | Habitat—An abundant weed of the fields in Central and N India (from Chuta Nagpur to the Panjāb), occasionally ascenalitude 2000 feet in the Himálaya, it is also met with in the v parts of Ceylon It appears very commonly in the monsoon early Medicine—The szens are officinal, being an efficiencial rendered arthoga. The fleve A Campbell (30), site Santil's extract a me | ung to urmer on iedy in |
| 871 FORDER 872 | oil from them. Food —The plant is used as a pot-herb in times of scarcity, eaten by cattle, especially buffaloes. | and 15 |

Celosia: Celsia.

CELSIA coromandeliana.

Celosia cristata, Linn , Fl Br. Ind , IV , 715; Wight, Ic , t. 730 Vern .- Kokan, fila murghka, lal-murghka, Hinn ; Mawal, taji bhoros. 873

FIBRE.

874

R

Shons. bucyclob . 038. Habitat.-Cultivated as an ornamental plant in the plains, and on the Himalaya, Kashmir (5,000 feet). In Spons' Encyclopadia occurs the remark that this plant is "Common all over Bengal and Northern India

generally" ribre.—"It yields a strong flexible fibre, so highly esteemed that rope made of . alla a. E

fact is has bee

> makes Spons' Encyclopædia quoted above, no author, as far as the writer can

considered astringent: MEDICINE.

· menstrual discharges.

heing eaten Besides, three of the vernacular names given by the Prolessor are not names for this plant Sil (and names derived from that word) are more correctly applied to Amarantus paniculatus, the seed of which is eaten, so that it seems probable Professor Church's account of Celosia cristata should be transferred to Amarantus paniculatus.

CELSIA, Linn. : Gen. Pl . II . 020.

Celsia coromandeliana, Vahl.; Fl. Br. Ind , IV., 251; Wight, Ic, 1 1406, SCROPHULARINEE.

> Vern -- Kuksh ma fal - / ti- -References. 217 ; Dals Hort Sub

Ind , 97;

Habitat .- An herb found throughout India, from the Panjab to Pegu and Ceylon, ascending to 5,000 feet in altitude. It generally appears during the dry season as a weed, on garden or cultivated lands

Medicine. - The inspissated suice of the leaves has been prescribed in cases of acute and chronic dysentery It acts as a sedative and astringent (Pharm of Ind)

Special Opinions - 6" Junce of the whole plant, including the root. leaves, and stem, squeezed out by pounding it, is used in hall chittack doses, morning and evening, in cases of syphilitic eruptions The juice of R

MEDICINE

878

| 240 | Dictionary of the Economic |
|--|---|
| CELOSIA argentea | Celestite, Celosia |
| 862 | Celastrus spinosus, Royle |
| | , s |
| | ble, |
| | Habitat —A thorny distorted bush abundant on the outer North- Western Himilaya (Kumaon and Garwhal, altitude 1,000 to 4 500 feet) |
| MEDICINE Seed | |
| 863 Timber 864 | Structure of the Wood—Lemon coloured hard and close grained, od deserves attention as a and engraving Baden walking-stucks |
| 865 | Celery. See Apium graveolens, Linn , Umbelliferæ |
| | CELESTITE , Mallet, Mineralogy, 141 |
| Bombay 866 | Celestite or Celestine is a natural mineral found in rhombic or |
| Pun)ab 807 | tabular crystals or in masses. It is a form of Strontum sulphate, which is used in the arts in the preparation of Strontum mitrate—a Sait employed in fireworks to give a red light. There are two localities in India where Celestite has been found—in Bombay and Sind, scattered over the surface of the Kirthar limestones, and in the Panjáb, on the tertiary red clays of the Sait Range. |
| | CELOSIA, Linn , Gen Pl , III 24 |
| | For botanical characters of the genus see under Amarantaceæ (A 914) The name is derived from kelos burnt, in reference to the colour of the flowers in the common garden species |
| 868 | Celosia argentea, Linn, Fl Br Ind, IV 714, AMARANTACEE |
| | |
| | |
| | |
| MEDICINE Seeds 869 Oil 870 FOOD | he fields in Central and Northern Panjab) occas onally ascending to it is also met with in the warmer parts of Ceyton it appears very cummonly in the monscon season. Medicine—The seeps are officinal being an efficacious remedy in diarribora. The Rev A Campbell says the Santials extract a medicinal |

diarrhora The Rev A Campbell says the Santals extract a medicinal oil from them Food—The plant is used as a pot herb in times of scarcity, and is eaten by cattle, especially buffaloes

FIRRE

874

MEDICINE

Flowers

875

876

FOOD

877

878

Celosia; Celsia

Celosia Cristata, Linn, Fl Br. Ind, IV, 715, Wight, Ic, 1730

Ve

References — Road Fl Ind, Ed CBC, 218, Dals & Gibs, Bomb Fl, 115, Stewart Pb Fl, 162 Marray Drugs and Pl, Sind, 101, Baden Possell Fb F 733, Balfour, Cyclop, Treasury of Battany,

Baten Powell Po Pr 43, Balfour, Cyclop, Treasury of Botany, Spons, Engelop, 338

Habitat.—Culturated as an ornamental plant in the plans, and on the

Habitat.—Cultivated as an ornamental plant in the plans, and on the Himalaya, kashmir (5000 feet) In Spons Encyclopædia occurs the remark that this plant is 'Common all over Bengal and Northern India generally'

"Fibre —"It yields a strong flexible fibre, so highly esteemed that rope made of it ells at five times the price of jute rope." Confirmation of this fact is much required, and also samples of the plant from which the fibre has been extracted. It is known in Bengali as Lalemarga, but Roxburgh makes no mention of the fibre, indeed, with the exception of the notice in Spons. Encyclopatia, quoted above, no author, as far as the writer can discover, allueds to the fibre.

Medicine —The FLOWERS are officinal, being considered astringent they are used in cases of diarrhoa and in excessive menstrual discharges

The seeps are viewed as demulcent

Special Opinion —6 'Seeds demulcent and useful in painful micturi-

tion, cough and dysentery" (Dr. U.C. Dutt, Strampore).
Food—Cultu sated in gardens—both the red and the yellow forms—on account of the stem which is eaten as a pot herb. Professor Ohurch in Food Grants of India) is apparently in error when he speaks of the food properties of the seeds of this plant. The writer can find no mention of the plant being cultivated on account of its seeds nor indeed of the being eaten. Besides three of the vernacular names given by the Prower of the plant being continued to the plant which is called the plant of the plant being continued to the plant being continued to the plant of the plant of

CELSIA, Linn , Gen Pl , II , 929.

Celsia coromandeliana, Vahl, Fl Br Ind, IV, 251, Wight, Ic,

Vern -Kukshima koksimd BENG , Kutki, MAR , Kuluhala SANS

and dur

case

gent (Pharm of Ind)

Lyciop

Special Opinions—5" Juice of the whole plant, including the root, leaves and stem, squeezed out by pounding it, is used in half chittack doses, morning and evening, in cases of syphilitie cruptions The juice of

MEDICINE Juice

| | 2 |
|--|--|
| CELTIS caucasica. | The Honey-berry, |
| MEDICINE. | |
| Root 880 | |
| | |
| | "The root is used in dysentery and as a cholagogue" (Brigade Surgeon |
| | J. H. Thornton, Monghir). |
| | CELTIS, Tourn.; DC. Prodr, XVII., 168, |
| 881 | Celtis australis, Linn., DC. Prodr., xvii., 169, 179, 179, URTICACEE. THE EUROPEAN NETTLE-TREE, THE HOREY-BERRY TREE. |
| | |
| | |
| FOOD. Fruit. 882 FODDER. 883 | Habitat.—A moderate-sized, deciduous tree, found in the Suliman and Salt Ranges, and throughout the Himálaya from the Indus to Bhután, ascending to 8,500 feet, also in the Khásia Hills. Extensively cultivated in South Europe. Food and Fedder—The tree is largely planted for fodder; cows fed on the leaves are supposed to give better milk. The FRUT is also cater. "It is remarkably sweet, and is supposed to have been the Lotus of the which Herodouls, Diogeorides, and the supposed to the supposed to the suppose of the supposed to give the which Herodouls, Diogeorides, and the suppose of the supposed to give the supp |
| timber. 884 | Streakine of the Wood.—Grey or yellowish grey, with irregular streaks of darker colour. Weight 47th per cube foot. It is tough and |
| domestic. 885 | king , y of Botany). |
| 886 | C. caucasica, Willd., DC. Prodr., xvii , 170. |
| | Veta.—Batkar, brámi, brimdá, brimla, bigní, bigu, kharg, khark, khirk, karik, kharak, khalk, ku, takhum, tágho, matkamman, karrah, kirku, kar, kargam, taghum, takpun, karg, kanghol mirch (the trut), Pa., Tughar, Pushtu. |

The Nettle-trees.

CELTIS cinnamomea.

References. Brandis, For Pl., 499, 429; Gamble, Yan Timb, 3417 Stewart, Ph. Pl., 209; Attchison, Cat. Pb. Pl., 1397; Balen Ferell, 14 Pr , 574; Balfour, Cyclop.

> FIERE. EBICINE

> > tarms 103 Sandalı.

Pl., 209)

Celtis cinnamomea, Lindl.; Kurz, For. Fl Burm., 11., 472.

Syn .- C. DI SODOTYLON, The. Vern .- Gurenda, Sing. References .- Gamble, Man Timb, 343, Thm, En. Ceylon

> stern . also

Vara. eva-ud for them's incensel, is used as a challin against evil spirits. Ryanda for trees a fine first the state of t tion having been drawn to this, a correspondence was instituted. Dr. D - cal Let J that the Domba c and samples C 1 -

MEDICINE 894

name of Celtis dysodoxylon.

ing people as pudacarpan, by the Dutch strunthout, ar

its disgusting odour, which resides specially in the thick stem and the larger branches. The smell of it so perfectly resembles that of human ordure, that one cannot perceive the smallest difference between them. at - san amount and the on a con-

other cutaneous eruptions, the body being at the same time anointed with

it externally," R 2

| 244 | Dictionary of the Economic |
|--------------------------|---|
| CELTIS Wightii. | The Nettle-trees. |
| Medicine Price 895 | Dr. Dymock states "The peculiar odour is probably due to the presence of naphhylamine. The price of the wood in Bombay is Raoper |
| | n :s: |
| | have been here recorded as a basis of further investigation, since the Indian trade in the wood is of some importance |
| 896 | Celtis eriocarpa, Dene ; DC Prodr., XVII., 179. |
| | Vern — Akaia, katáus HiND, Batkar, kat tomanku, P8; Tagha, h1G References — Brandu, For F1, 279, Gamble, Man Timb, 343; Baden Powell, P6 Pr, 574; Balfour, Cyclop Habits Salt Rant from the |
| DOMESTIC 897 | Domestic Uses The Data is used for making snoes (Daten rozen) |
| | C. orientalis, Linn See Sponia orientalis, Planch |
| 898 | C. Roxburghu, Planch, Brandix, For FI, 429. Syn.—C TRIVERVIA, Rozb, FI Ind, Ed C B C, 252 |
| | Vern - Kharak, bathar, brémaj, bremdu, Pa , Cher, chara, katheniar, C. P. Beomen, Pont. References - Bedd, Fl. Syle, CCCXII. Gemble, Man. Tumb. \$43; Dals & Ghb. Bemb. Fl. 773, Lisbon, U. P. Bemb. 131 |
| timber 899 | |
| 900 | C. tetranda, Roxb , DC Prodr , XVII , 179 EUROPEAN MYRTLE TREE |
| | "- "- " T \ 1" 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| | (· · · · · · · · · · · · · · · · · · · |
| | HabitatA tall tree of the outer Himálaya, from Kumaon eastward, |
| TIMBER. | to the Ava Hills in Burma, also on the Western Chats Structure of the Wood —Greyish white, moderately hard Used in Assam for planking and canoes. |
| | C. trinervia, Roxb See C. Roxburghu, Planch. |
| 902 | C. Wightii, Planch ; DC Prodr , XVII , 184; Wight, Ic , t. 1969 |
| | Sym — Sout-Nortina Wichtil, Bl., Kurs, For Fl Burm, II, 411 Vern — Vella thorseay, Tau, 7:tla la kak-makht, Tet. References — Gomble, Mon Timb, 343; Throates, En Crylon Pl, 267, Balfour, Creley Habitat—A small evergreen tree of the mountains of South India and |
| 71MBER. 903 | the Andaman Islands, is also met with in the hot dry parts of Ceylon Structure of the Wood—Greyish white, very hard, close-grained Weight 53 h per cubic foor. Annual rings indistinctly marked by a nar- row belt without pores (Gamble) |
| | C. 903 |

Cements.

CEMENTS. 004

CEMENTS.

CIMENTS, Fr.: CAMENTE, EITTE, Ger. The term "Cement" is applied to a class of substances used for uniting two bodies, and which ultimately harden and bind them together,

The following classification of these substances from Spons' Encyclopadia may be here given: (a) Calcareous cements, (b) Gelatinous cements, (c) Glutinous cements, (a) Resinous cementing compounds, and (e) Non-resinous cementing compounds Interesting information regarding the Cements of India will also be found in Bilfour's Cyclopadia of India.

005

from 10 to 25 per cent of alumina, magnesia, and silica, yield a lime, on burning, which does not slake when moistened with water, but forms a mortar with it, which hardens in a few days when covered by water." 1 " D - 10-3

cements. (See Cocoa-nut Juice under Cocos nucifera)

(b) GELATINOUS CEMENTS -These have their origin in the substance known as "gelatine" obtained by boiling animal tissues in water. It is separated from water by simple evaporation, when it is converted into a dry hard substance called by different names, such as "glue," "size," "isinglass," &c., according to the sources from which they are derived.

Of these, "glue" and "size" are employed as cements, and in India a strong and useful glue, made from cartilage obtained from fish, is used by every jeweller and gold-leaf beater.

(c) GLUTINOUS CEMENTS -The base of this class of cements is a sub.

this class of substances are due to the presence of resin, gum-resin, or gum, such as common rosin, india-rubber, gutta-percha, gum arabic, &c. The following are a few of the Indian plants which are known to afford sub-

stances used as cements :-Adenanthers pavonina (seeds), Cratæva religiosa (fruit). Ægle Marmelos (glutinous and Dichopsis elliptica (gum). tenacious matter).

Artocarpus hirsuta (juice). A, integrifolia (juice). Balsamodendron Roxburghii (gumresin)

Bauhinia retusa (gum). Borassus flabelliformis (juice). Euphorbia Cattunandon (milky

juice) E. Royleana (juice). Feronia Elephantum (gum), Tamarindus indica (seeds). Typha angustifolia (down of the ripe fruit).

C. 908

Calcarcous.

Gelatinous.

906

Glutinous 907

Resinous. 800

| | and the same of th |
|--------------------------|--|
| CELTIS Wightii. | The Nettle-trees |
| MEDICINE Price 895 | Dr. Dymock states "The peculiar odour is probably due to the presence of untilitylamine" The price of the wood in Bombay is Rayo per Candy of 7½ cwts. The Portuguese call it Rao de merda and Pao Sujo". It has thus still to be proved that the Narahya-ul is derived from Celt a clamamomea, but should thus be found correct, it is probable Ind a may get its supplies from Assam or Butma, or perhaps from the Malayam Pennisula instead of from Ceylon. The various opinions given above have been here recorded as a basis of further investigation, since the Ind an trade in the wood is of some importance. |
| 896 | Celtis eriocarpa, Dene , DC Prodr, XVII, 179 Vern — Akata katdia Hind, Batkar bat tamanku, Pt., Tagha, Aro |
| | References — Brandis, For FL, 430 Gamble, Man Timb, 341, Baden Fracil, Pb Pr, 574; Balfour, Cyclop Habitat.—A moderate sized, deciduous tree, found in the Sulman and Salt Ranges from 2 000 to 3 000 feet, and distributed along the Himâlaya from the Indus to Nepal ascending to 4 500 feet |
| DOMESTIC | Domestic Uses - The bark is used for making shoes (Baden Powell) |
| 897 | C. Orientalis, Linn See Sponia orientalis, Planch |
| 898 | C. Roxburghii, Planch , Brands, For Fl , 429 |
| | Syn — C TRINERVIA, Roxb FI Ind, Ed C B C, 252 Vern — Kharach balkar brunaj, brundi, Pn, Cheri chara, kathuniar, C P, Bowmaj, Bons Beferents—Redd El Sule, CCCXII. Gamble, May Timb, 341 |
| | References—Bedd Fl Sylv, CCCXII, Gamble Man Timb, 343; Dals & Gibs Bomb Fl, 773, Lisbon U Pl Bomb, 137. |
| | in the |
| timber 899 | thans |
| 900 | C. tetranda, Roxb DC Prodr, XVII, 179 EUROPEAN MYRTLE TREE |
| | { · |
| | |
| | |
| JIMBER. | Assam for planking and canoes |
| | C trinervia, Roxb See C Roxburghu, Planch C. Wightii, Planch; DC Prodr, XVII 184, Wight Ic, 1 1969 |
| 902 | Syn — SOLENOSTIGNE WICHTHI, Bl. Kurg, For Fl. Burm., II., 411 Vern — Vellet khorasy Tan., Telle kaba makht. Tel. References — Gamèle Man Timb., 343, Thwaites En Ceylon Pl., 267 Balfour, Cvide. |
| | Habitat - a f he me no ne of South India and |
| TIMBER 903 | |
| | C 903 |
| | |

Cultivation of Inecacuanha,

CEPHAELIS Ipecacuanha

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sternutatory Boiled to a paste and applied to the cheeks, it is employed MEDICINE.

in the cure of tooth ache" (Alurray).

Special Opinions.—5 "Nak chirdi, sulphur, vinegar, and the leaves called chirta, inved together, are used for pityriasis versicolor" (Surgeon-Major C. W Calthrop, Morar). "It is used for hemicrania" (Surgeon-Major F. Robb, Ahmidab id).

CEPHAELIS, Swartz.; Gen. Pl., II., 127.

Cephaelis Ipecacuanha, Ruh.; Fl. Br. Ind., III., 178; Bot Mag.,

IPECACUANHA ROOT, Eng.; RACINE D'IPÉCACUANHA ANNELÉE, Fr., BRECHWURZEL, Germ.

Sgn.-C. EMETICA, Pers; CALLICOCCA IPECACUANHA, Brot.; IPECA-CUANHA OFFICINALIS, Arruda

References,—Kurs, For. Fl Burm, 11,5; Gamble, Man Timb, 219; Pharm Inc.

Ind , 543 ; (1873, 233 , Papers, 343

Ag Hort Soc , Vol. V , p 47.

CULTI-VATION.

creasing costliness of the drug, have occasioned active measures to be taken for attempting its cultivation in that country. Though known for several years as a denuer of botanical gardens, the necessitable plant has always been rate, owing to its slow growth and the difficulty attending its propagation.

culty has The first

had been standing every care, the plants could not be made to thrive. Three plants, which had been sent to the Rungbi plantation in 1868, grew rather better, and by adopting the method of root propagation, they were increased by August 1871 to 300. Three consignments of plants, numbering in all 370, were received from Scotland in 1871-72, besides a smaller number from the Royal Gardens, Kew. From these various

conditions as regards sun and shade, but thus far with only a moderate

Dr. King reported to the Director of the Royal Botanic Gardens, Kew, in 1877, that he had distributed plants from the Calcutta Botanic Garden to Ceylon, Singapore, Burma, and the Andaman Islands, and also stated

| 240 | Dictionary of the Economic |
|---|---|
| CENTIPED | |
| Resinous | |
| Non-resinous 909 | class are too numerous to be mentioned here. The reader is referred to the list given in Spons' Encyclopadia, pp. 626-627 |
| | CENCHRUS, Linn, Gen Pl, III, 1105 Cenchrus catharticus, Del, Duthie, Fodder Grasses, 15, Graminer Syn.—C Echinatus Rich. Vern—Bhurt, Hind, Dhaman, argana N W P, Basia, led Iapta, bbort, Pa, Bharbhunt, Isprorer, Bharout, Amiri, Kukan, Banda, References—Streat, Pb Pl, 183, Aitchison Cat Pb Pl, 163, Marray, Pl and Drugs, Sind, 10 13, Duthie, List of Grasses, N W P, 9 of the |
| FODDER 910 | ritious thir) The |
| 911 | C. montanus, Nees. This fodder grass is known as the anjan and dhaman in the Panjáb, and is considered by some one of the most nutntious of grasses and makes good hay |
| 912 | CENTAUREA, Linn, Gen Pl, II, 477 Centaurea Behen, Linn, Confositz The White Brene of White Rhaponic Veta—Bahman safaid suffaid bahman Hind, Bons; Behen (or |
| | Habitat —A native of the Euphrates Valley The root is largely imported into India, reaching Bombay from the Persian Gulf It is always to be found in native druggists' shops |
| 913 | CENTIPEDA, Lour, Gm Pl, II, 430 Centipeda orbicularis, Lour, Fl Br Ind, III 317, Wight, Ic, [1 1010, COMPOSITE Sym—ARTEMISIA STERNUTATORIA, Rook Fl Ind Ed CB C 600 |
| MEDICINE Seeds 914 Leaves 915 | in sea Medicine — T Hindus also the pc Indus, but the dry ed in the druggiste dered Lawys are used in affections of the head, such as colds, &cc , as C. 915 |

Cultivation of Ipecacuanha,

CEPHAELIS Ipecacuanha.

conditions as to soil, moisture, and shade. We have not even now a

tropical It may, therefore, be found necessary to afford the plants

however, fortunately not been realized, and the drug is now obtainable at pretty much the same price as twenty years ago "

In South India cutivation seems more hopeful than in Siklum. The late Mr. Mctivor, in May 1870, planted a few Jecacumha plants in the Botanic Gardens at Barbyls. These succeeded fairly well, but in 1881 82, Mr. Lawson, the present Superintendent of the Botanic Gardens, reported that he did not think the plant could be there grown as an article of comerce Later on, he seems to have attained more confidence in the positive of the property of th

been made above, that gentleman says of the South Indian experiments

could not produce the drug in any quantity at the usual market rate (from 4 to 5 shillings per pound), at which it can be bought in I. London "
I han othical communication dated May 1887 Dr. Bide writes hopefully

PROPAGA-

product. There are doubtless, however, many other similar regions where it might be grown. The plant grows slowly, and has hitle in it to attract the attention of the cultivator, so that it may be doubted when private enterprise may be prepared to reheve the Government of its present!

| • | titionary by the Etonomic |
|-----------------------|--|
| CEPHAELI pecacuanh | |
| CULTIVA- TION. | to prevent the culti opean planters The s, besides, little calcu |
| 1 | |
| | seedlings, and in 1870-71 Some of these were culti- sent to Madras. Of the |
| | Ningili nilis were not round to be suitable. About this stage the Bombay Government became anxious that a consignment of plants should use the Cinchona planta-definite consignment of Messrs > Mr W. Walton of the Cotton Dease, under the care of that gentle which Dr King, in 1871, reported as thy condition. These were sent to the consignment of the consignment of the consignment of the control o |
| 1 | ♥ I * I · ten- |
| | the writer has been permitted to peruse, it would appear that the process of |
| | them "The recent success in propagating has been entirely due to the discovery that this plant, unlike most others, can be propagated freely the plant's growth, materials y Propagation has all along and at an elevation of about have naturally been confined into so get a sufficient. |
| | large stock for experiment, with the view of determining the conditions |
| | |
| | the control of the co |
| | of plants have been put out at different elevations and under different $C.\ 916$ |

Cultivation of Ipecacuanha.

CEPHAELIS Ipecacuanha

conditions as to soil, moisture, and shade. We have not even now a CULT

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PROPAGA-

product. There are doubtless, however, many other similar regions where it might be grown had attract at a tract at a private enterprise may be i

CEPHARLIS Ipecacuanha.

Medicinal properties of Ipecacuanha,

PROPAGA-TION.

efforts. Dr. King, in his paper read before the Agri-Horticultural Society. indicates clearly the peculiarities and necessities of the plant, and in his more recent communication (the official papers referred to above) he reiterates more strongly the same opinions, "There can be no doubt that the occurrence of a distinctly marked cold season is disadvantageous to the growth of Ipecacuanha. I sent plants of it for trial to the Andaman Islands and Singapore, both being localities where there is no cold season. But at neither place has the cultivation been much of a success. I had an opportunity of seeing, in the Singapore Garden, during the year 1870. the Ipecacuanha plants which I had sent from Calcutta, a year or two pre-And contrary to my expectations, I found them growing very indifferently The plants sent to the Andamans I have never seen, but I understand that they did not come to much"

Large numbers of plants have been freely distributed to private cultivators, but it may be concluded that it still remains to be demonstrated whether or not the medicinal properties are preserved in the Indian cultivated stock. These may improve as in the case of some of the Cinchonas, but on the other hand, they may decline, so that it must be concluded Ipecacuanha in India is even now but in its most early experimental stage.

1-1---

EDICINE. Root. 017

> I ne treatment of this disease by large doses of Inecacuanha (grs. xxx to grs. lx), of late years re-introduced, has been found most effectual. In diarrhoea, and in some forms of dyspensia, especially when connected with functional derangement or torpidity of the liver, it acts beneficially. As an expectorant it is in common use in catarrhs, chronic bronchitis, asthma, phthisis, the early stages of hooping-cough, &c. In hoemorrhages, especially in uterine homorrhages and in menori hagia, it has proved an effectual remedy. For removing crude and indigestible matter from the stomach, Ipecacuanha acts with certainty and safety as an emetic, without inducing nearly the same amount of subsequent depression that follows tartar emetic, it is especially adapted for childhood and for persons of a delicate constitution As a counter-irritant (2 drs. of powdered Ipecacuanha incorporated with 2 drs of olive oil and 4 drs. of lard, rubbed into the skin for a few minutes, once or twice daily), it has been advan-

CHEMISTRY. 018

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the aikaloid, which, taken internally, is a potent emetic.

Medicinal properties of Ipecacuanha

CEPHAELIS Ipecacuanha,

"Emetine, discovered in 1817 by Pelletier and Magendie, is a bitter of substance with distinct alkaline reaction, amorphous in the free state as well as in most of its salts, we have succeeded in preparing a crystallized budgehilorate.

"The root yields of the alkaloid less than 1 per cent, the numerous lugher estimates that have been given relate to impure emetine, or have been and the hard of the second of the secon

' 20 H 20 N2 O5, found in 1877

I bark of the

· solution containing but

· solution containing but be

to then and will atch-

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"If the wood, separated as exactly as possible from the bark is used

res and

Special Opinions — § "Applied locally to lites of venomous insects and scorpions" (Surgeon-Major C W Califrop, Morar) "With out door patients suffering from dispetier Incomplete Incomplet

used with much benefit

used with much selection pull, and given every three of the mount, when for a malanous origin, quinne one grain to each pill was added " (Honorary Surgeon Peter Anderson, Madras Presidency)" In 3 gr (does it is a most efficient calmative and sedative in-delirium tremens" (Surgeon-Major W. Farquhar, Ootscamund)

CEPHALOSTACHYUM Coccinia Indica. capitatum. CEPHALANDRA, Schrad.; Gen. Pl., I., 827. Cephalandra indica, Naud ; Fl. Br. Ind., II., 621; Wight, Ill., OIO 1. 105 / CUCURBITACEM. bung, tsa-tha-khwa, Burm : Kovaká, Sing References - Pa ' 128 ; Dals & r : Lishoa. Habit MEDICINE. Medic plant is Juice. used by metallic 020 preparations prescribed by them in diabetes." "The expressed juice is directed to be taken in doses of one tola along with a pill, every morning." (U C Dutt, Mat Med Hind) The Root, according to Moodeen Sheriff, is sold as a subst in the bazars of Southern India and are useful as a colouring ager the essential oil. "The noor when Root. 021 which hardens into a reddish gum on drying, and is very astringent, but not bitter like the fruit" (Dymock) "The bark of the root, dried and reduced to powder, is said to act as a good cathartic, in a dose of 30 grains" (Medical Topography of Dacca, 58). "The Leaves, mixed with Leaves. Q22 ghi, are applied as a limment to sores The whole plant, bruised and ered cummin seeds, is nson) "The leaves he plant internally in gonorrheea" (Balfour) "In the Concan the green fruit is chewed to cure sores on the tongue" (Dymock). Food -"The oblong PRUIT, about 2 to 23 inches long, green when FOOD. young, scarlet-red when ripe, fleshy, smooth, is eaten both raw and Fruit. 023 cooked The ripe fruit is sweet" (Lisboa) The fruit is one of the commonest of native vegetables (Dymock). It is eaten fresh when ripe and coaked in curries when green (Roxb) 024 Cephalocroton indicum, Beddome, 261; EUPHORBIACEE. A common tree in the moist forests of South India (altitude 1,500 to 4,000 feet); yields a timber useful for building purposes. CEPHALOSTACHYUM, Munro; Gen Pl, III., 1213. (See Vol. I., B 60, No. 0.) Cephalostachyum capitatum, Munro; GRAMINEE. 925

Vern .- Gobia, gopi, Nepal . Payong, Lepcha; Silli, sullea, Khasia.

Reference — Gamble, Man. Timb, 429.

Habitat — Found in Sikkim and the Khásia Hills.

| Products of India | -J. |
|--|-----------------------|
| Wax. | CERA alba. |
| Food —This semi-scandent and often gregarious hamboo, on flower- | 6000. 6000. 926 |
| to 30 feet long, strong, with internodes about 23 feet, thin, yellow, used for bows and arrows by the Lepchas It flowered in Sikkim in 1874 ($Gimble$) | 71MBER. 927 |
| Cephalostachyum latifolium, Alunro Reference — Gardie, Man Tindo, 129 Habitat — A species with large leaves, found in Bhután. | 928 |
| C. pallicute, Munro, Kuro, For Fl Eurm, II, 563 Vern.—Bata, Vss. Reference—Gamble Man Timb 429 Habitat.— A bamboo with shrubby stems li grows in the Mishmi Hills and in Asa | 929 |
| C. pergracile, Munro, Brandis, For Fl, 567 Vern — Timwa, kengwa Dusu References — Aurs, For Fl Burm, II, 554, Gamble, Man Timb, 419 Habitat — A bamboo common in upper mixed foresis of Burma, often gregarious It has stems often 40 to 50 feel long | 930 |
| CERA. Cera aiba and flava. | 931 |
| References —Pharm Ind., 278. Moodeen Shoriff, Supp. Pharm Ind. 97. Annile Mad. Ind. 1, 900, Budie Cat. Any Irod., Pars. Exc., 16. Kes. XI. 197. P. Parsd., Octo Henning, Afal PI and Drugs, Ann. 16. Kes. XI. 198. Description.—I The prepared Hone, comb. Occurs in masses, firm breaking with a granule. | l |

breaking with a granula-

light Occurs in circula not prethous to the touch at a does not ment under 150 h (Pharm. Ind) Medicine - Honey is emollient and slightly laxative, and is often

MEDICINE, 932

ina) For turther information see Bees, also Wax Special Opinions - § The oil is used as a linument and is of great value in muscular and chronic rheumatism' (Surgean Major A S G Jaya254

CERATONIA Siliqua

The Carob Tree.

Ceramic Manufactures, 226 Earthen-ware Cerasus cornuta, Wall, see Prunus Padus. Linn.

CERATONIA, Linn , Gen Pl., I , 574

933 Ceratonia Siliqua, Linn., DC Prodr., II, 486, LEGUMINOSE.

THE LOCUST TREE, THE CAROB TREE, ST JOHN'S BEAN, OR BREAD OR LOCUST BEAN, ALGARDBA of Spain, CARRUBIO, II, CARUBA, Ger

CARUBA, Utr Vern - Kharnub, kharnúb nubti (the pods), Ps ; Kharnub shámi or khirnub nubti, Arau

ndia.

Habitat - A slow-growing, evergreen tree, indigenous in Spain and

CULTIVA-TION.

934

| Products of India. | - 7. |
|--|---|
| Cultivation of the Carob. | ERATONIA Siliqua. |
| In the Panjab, considerable quantities of seed have been soon from all early as 1844, in the distincts of Panjat, Gurgaon, Rohtak, and Delhi (Stewart, Ph. Pl., 63) Mr. Ricketts was of opinion that the seeds should not seed sould be well scaled before planting, and the trees when planted out should no | 935 |
| be well coaled before planting, and the trees when planted out should no be too far from each other to ensure their fruing. In Madrat, the experiments were made in various localities, but the general result was anything but satisfactory. The seeds did not germinate in some cases, and in others, the ecclings soon died off. | 930 |
| In Bombry and Sind—"During the last two years, District Fores Officers in the Bombay Presidency have been engraged in carrying or experiments with carob seed, but the results do not appear to have been every promising. In Sind the Conservator states that all the plants wer protected by mats from the frost during the cold season, and adds the when once these plants have established themselves in the soil, they should be able to exist without artificial strigation or protection; at present the are too small, and it would be premature to express an opinion as to the Bourshing in Sind or not. The Superintendent of the Leonomic Garde at Haidarabad, Sind, also states that, though the plant will grow, the slowness of seconds. When the plant will grow, the slowness of seconds. When the plant will grow, the slowness of seconds. When the plant will grow, the slowness of seconds. When the plant will grow, the slowness of seconds. When the plant will grow, the slowness of seconds. When the plant will grow, the slowness of seconds. When the plant will grow the slowness of seconds. When the plant will grow the slowness of seconds. When the plant will grow the slowness of seconds. When the plant will grow the slowness of seconds. The plant will grow the slowness of seconds. When the plant will grow the slowness of seconds. The slowness of seconds are slowness of seconds and the slowness of seconds. | t d d d d d d d d d d d d d d d d d d d |
| Proceedings of the second seco | . 938 |
| a, in. | |
| whole t Met notions ey are said t ringent. Ti pectoral, ar is to the | ie 939 |
| Food.—The pods, full of such a large pod food in the Mediterranean ported into the Panjab unc They form an important consupposed to be the "husks" John the Baptist, | FOOD, Pods, 940 |
| C = | |

CERBERA Odollam

The Carob Tree.

In the Treasury of Botany occurs the following account of Carob pods as a food stuff "These pods contain a large quantity of agreeably-flavoured, mucilaginous, and saccharine matter, and are commonly employed in the south of Europe for feeding horses, mules, piess, &c, and occasionally, in times of scarcity, for human food During the last few years, considerable quantities of them have been imported into England and used for feeding cattle, but although they form ar agreeable article

price, and were used by singers, who imagined that they softened and cleared the voice. By fermentation and distillation, they yield a pirit which retains the agreeable flavour of the pod." Professor Church in Food-Grains of India (p. 170) states that "The nutrient ratio is here about 1 8 s, and the nutrient value 68 As sugar, pectors, gum, &c, cocurb the place of starch in these pods, the starch couvalent cannot be

TIMBER. 041 DOMESTIC Seeds. 042

Capiner work , (Dranats)

CERBERA, Linn , Gen Pl , II , 699

Cerbera Manghas, Linn, see Taberoæmontana dichotom, Roxb, [APOCYNACEE

943

C. Odollam, Gærin, Fl. Br Ind, III, 638, Wight, Ic, t. 441
Syn—C Lactaria, Ham, Tanghinia Odollam, lactaria, and lauri folia, Don

Vern — Dabur, dhakur, Beng , Kada ma, kat aralı, kadaralaı, kadu, TAM , Odallam, MALA , Gon kaduru, SING , ha lwah, BURM

References - Roxb, Fl Ind, Ed C B C 232, Brandts, For Fl, 322, Kurs, For Fl Burm, II, 171, Gamble Man Timb 262, Thuaites, En Ceylon

FIBRE.
Bark.
044
OIL
Seeds.
045
MEDICINE.
Sap.
046
Leaves.

Habit

. C. 043

CEREVISIÆ Cerbera : The Yeast Plant. Fermentum Hot gative Q50 TIMBER. 95I ally used for firewood Domestic Uses .- The poisonous suice of the fruits was formerly used DOMESTIC. Ordeal Nutin Madagascar as an ordeal in cases of suspected crime or apostacy 952 (Kem Cat , 96) Cerbera Thevetia, Linn , see Thevetia neriifolia, Juss. CEREALS. 953 din all addition or obtained from the cereals RN, and parately. the reader is information. such as the r into Cereals or Pulses, such as buckwheat, amarantus, &c. CEREVISIÆ FERMENTUM. Cerevisia: Fermentum. 954 YEAST PLANT OF TORULA CEREVISIA.

Reference .- Pharm. Ind , 252

The history of yeast is replete with interest, even although many of the details of the action of the plant in the process of fermentation are

955

undant ated to action

agent with the sugary riquits. In must be viewed as a closely allied phenomenon to the effect of sulphuric acid on starch, contact converting the latter into sugar, while the acid itself remains unchanged in quantity or

CEREVISIÆ Fermentum

The Vesst Plant

chemical nature. In the process of been-brewing two manifestations of the same kind are met with. The grain from which the beverage is to be prepared is first moistened either with hot water or by being placed in a transplace. As the result, it sprouts or germinates. The chemistry of this action consists in the fact that is a warm mist starch of the grain converts the latter into sign. Disatase may be defined as a transformed condution of gluten produced within the seed during the first stage of germination, and we sooner is the disatase formed than it immediately commences to act upon the insoluble starch. This is a wrise provision of nature. The timbroy polant is imbedded in a mass of starch. The base of the embryo contains glutten, but both starch has the provision of acture. The timbroy plant is imbedded in a mass of starch. The base of the embryo contains glutten, but both starch and glutten are insoluble, and cannot be transformed into the structure

new substance is rapidly absorbed, and for the first period of its existence the infant plant feeds upon the food stored up for it within the seed. It

witen the mississe completes its action on the still insoluble statch. It has been found that for every 100 parts of starch, in good milt, ilb of diastase is produced, but that quantity will suffice to convert the starch of 1,000lb

brewer niters the wort, for the boiling has not only killed the diastase,

956

nourishment these minute plants take has never been clearly established,

in some respects better than the beers that used formerly to come to this country in such large quantities. The yeast is killed by the process of heating to 60°. In the brewing of beer only about a quarter of the fermentable substance is converted into alcohol, the remainder giving the

or Torula Cerevisiæ

CEREVISIÆ Fermentum

sweet flavour to the beverage. The yeast lives and increases in the fermenting liquid, but appears to abstract nothing from it, and just as contact of disastase has changed starch into sugar, so contact of yeast with

tact of diastase has changed source.

"ugar produces alcohol

It has already been said that there would appear to be other sub-

057

058

and distilled The flowers are placed in earther vessels and mixed up

for future use, having discovered that if not washed out these vessels

Saram lutur), to make the beverage intoxicating According to some authors, an alcoholic beverage is prepared from the juice of Calotrons

| Fe nentu | |
|----------|---|
| 959 | granda kan aka asaang ahii da aan ili kan ne. Si |
| | |
| | shown that the substances indicated are after all only flavouring ingredients or at most auxiliaries to fermentation; but in that case the true |

960

void 20 feet in length and 3 feet in thickness is been out into a large trough. This is placed in the centre of the village, constituting the com-

to, no other instance is known

munal brewery f sii. A large qu water is poured.

when on the thi

961

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Afghanistan from raisins. But apparently wheat and barley are but rarely used for this purpose, the liquor from the former being called Madulika and from the latter Kohala.

In India the favourite beverages are prepared from the junces of trees, chiefly palms (Várum), or from sugar-cane (Sráhn). For this purpose the junce is extracted from the coccanut, the date, the palmyra, Caryota ureas, and the nim tree. Fermentation is generally set up in these beverages by means of fermentation, seed. This consists of rice saturated in a former fermentation, the grains of rice retaining apparently the germs of the yeast plant Yeast from the tare beverage is largely used

MEDICINE QÓ3

962

cessfully used
It is chiefly
used as a poultice. In India, where yeast is rarely procurable, the toddy
(tar) poultice, in a great measure, answers the purpose. (Pharm Ind.:

see also the fermentation seed of Borassus, B. 689)
C. 963

| The Mangrove. | CEROPEGIA Arnottiana. |
|---|--------------------------------------|
| CERIOPS, Arn.; Gen. Pl., I, 679. Ceriops Candolleana, Arnott, Fl. Br. Ind., II, 436; Wight, II THE MANGROVE. | g64 E. |
| Vern.—Kırrarı, kırlı, chaurı, Sind, Gorán, Beng ; Mada, And. References.—Braudis, For Fl, 718, Kırış, For Fl, Burn, J, 448, B dont, Fl Syko And, Fl, XIII, Fig. S, Gomble, Man Timb, 17 Thawlies, En. Ceylon Pl, 120, Aitchison, Cat Pb. Pl, 50, Murra Pl, and Drugs, Sind, 150 | 6, |
| HaditatA small, evergreen tree, met with on the muddy shores ar | nd (|
| | 905 |
| | TAN. 966 |
| decection of the BARR is used to stop harmorrhage, and is applied malignant ulcers. On the African coast, a decection of the sitioors used as a usbituite for quintine, Structure of the Wood—Red, hard, weight, 63th per cubic loot. Use in Sind for the knees of boats and other similar purposes; in Low Bengal for houseposts and for firewood Domestic Uses.—The bank is used as a litter for cattle. | Shoots. OGO TIMBER. O70 Litter for |
| C. Roxburghiana, Arnoll; Fl Br. Ind., II, 436. | 971 972 |

Vern .- Garán or Ghorán, Bang ; Kabaing, hyabaing, ka-pyaing, Burm. References.—Kurs, For Fl Burm, I, 443; Gamble, Man Timb, 176; McCann, Dyes and Tans, Beng, 133, 158, 458.

ad '- form no facebar

Habitat .- A large shrub of the coast of Chittagong, down to Tenasserim (Kurs)

> TAN. Bark. 973 84E. Bark. 974

TIMBER. 975

076

cloths (McCann)

Structure of the Wood-Weight of the wood, 46th per cubic foot,

CERIUM.

This metal is used medicinally in India Minerals supposed to contain it have been collected in the Karnal district, in Madras, and in Nepal (See Ball's Econ Geology).

CEROPEGIA, Linn.; Gen. Pl., II., 779.

Ceropegia Arnottiana, Wight; Fl. Br. Ind., IV., 74; ASCLEPIADER. Vern .- Uta-long, BURN.

Iceland Moss

Ceropegia

Reference -Balfour Cyclop

CHÆTOCARPUS

castaneæcarpus

| | Reference Bayour Cyclop |
|--|--|
| | Habitat —Grows in Khasia Mountains, Burma, and Tenasserim |
| 978 | Ceropegia bulbosa, Roxb, var esculenta, Fl Br Ind., IV, 67, [Wight, Ic., t 845] |
| | Vetn — Khafpar kadu, Hino , Patalalum bari Bome Reletences — Roxb Fl Ind , Ed C B C , 250 , Dals & Gibs Bomb Fl 153 Logd Hort Sub Cat 534 Dymock Mat Med W Ind 2nd Ed , 525 Lisboa, U Pl of Bomb 105 , Balfour, Cyclop |
| roop Tubers 979 Leaves 980 Roots 981 | Habitat — Met with in the Panjab and in the Bombay Presidency Food —Trusres and Levizeare used as proherbis in Mulan and Sind Shepherds are fond of eating the tubers, which they consider to be tonic and digestive "Every part of this plant is eaten by the natives, either raw or stewed in their curries. The fresh Roots taste like a raw turnip" (Roxburgh) |
| 985 | C tuberosa, Roxb; Fl Br Ind IV, 70 |
| | Syn — C. Acusinara, Dals & Gobt , i.e. net of Rath Vern — Khapper had a Bons , Palidi tumbdi, Mar. Commu madu, Tet. References — Roub, Fl. Ind., Ed. C. B.C., 251. Dals & Gob. Bomb Fl. 153. Dymack Mat. Med. W. And. 436, Murray, Pl. and Drugs Sund 162, S. Ann. Bomb Drugs, 85. |
| | HabitatMet with in the Deccan Peninsula from the Konkan south- |
| MEDICINE Tubers 983 | wards , |
| | appl cable to both plants and perhaps to one or two other species such as C juncea and C acuminata |
| | Cetaceum, see Physeter macrocephalus, Linn , MAMMALIE |
| 984 | Cervidæ, the fam ly of the deer of interest economically for their antiers and their skins 'See' Horus 'and also Skins' |
| | CETRARIA. |
| 985 | Cetraria islandica, Achar, Lichenes, Iceland Moss |
| medicine 986 | References — Phorm Ind 258 Flack & Hanb Pharmacog 737, O Shaughnessy Beng Dispens, 672 Medicine — Imported into India and Sold in chemists' shops |
| | |
| | Cevadilla or Sabadilla, see Asagræa officinalis, Lindl, Lillace |
| | Ceylon Moss, see Gratillaria (Plocaria) lichenoides, Greville, ALGE |
| | CHÆTOCARPUS, Thw Gen Pl, III, 323 |
| 987 | Chætocarpus castaneæcarpus, Thw ; DC Prodr, XV 2, 1127, [Euphormaceæ |
| | Vern — Bulkokra Beng , Palakuna, sadayaku, TAM , Hedóku, héda- waka Sing |
| | |

C 987

| Chara and Nitella. | CHARA involucrata |
|---|----------------------|
| References -Kurs For Fl Burm, II 419 Ganble Max Tx 16, 366, Thmatles, En Ceyto 1 Pl 275, Trine 1 System. Cat., Ceylon Pl, 82 | |
| Habitat A moderate-sized tree, found in the Khasia Hills, Eastern Bengal, Burma, the Andaman Islands, and Ceylon | 1 |
| Structure of the Wood - Light red, moderately hard, close-grained, weight 58th per cubic foot, used in Ceylon for building | 988 |
| CHAILLETIA, DC, Gen. Pl, I, 341. | 1 |
| Chailletia gelonioides, Hook , Fl Br Ind , I , 570 ; CHAILLETIACEE | 989 |
| Syn — Mingurra, Silhet, Berg, Balu nakuta, Sing Vern.— Moakurra, Silhet, Berg, Balu nakuta, Sing References — Kurs, For Fl Burm, 1, 230 Gamble, Man Timb, 80 Beld, Fl, Sylv, 59, Thousies En Ceylon Pl, 79, Timben, System Cal Ceylon Pl, 17, Dals & Gibts, Bomb 47, 52 Lisbon UP? Bomb 47 | , |
| Habitat—A small subdimenous tree, commonly met with in the hilly eastern parts of Bengal and Sibhet, in the forests of Madras, and in this Western Peninsula on the Ghats from the Konkan southwards, it is also met with in the moister parts of Ceylon up to an elevation of 3,000 feet Structure of the Wood—This is one of the umber trees specially mentioned by Dr Lisboa in his Useful Plants of the Bombay Presidency, but very little of a definite character can be learned recarding the value | TIMBER. |
| of the wood | |
| Chalcedony, see Carnellau Chalk, see Carbonate of Lune | } |
| | 207 |
| CHAMÆROPS. | 991 |
| Chamærops Ritchieana, Griff, Gen. Pl., III, 924; see Nannorhop Ritchieana, Palmæ | • |
| Chamois Leather, see Leather & Skins. | Į. |
| Chamomile or Camomile, see Matricaria Chamomilla, Linn; Com | |
| Chanáy Kéléngu, see Tacca pinnatifida (?) Chank shells, see Shells and also Pearl Fisheries | |
| Ottomic Suchs, see Suchs and also reall Printeries | |
| CHARA. | |
| Chara involucrata, Roxb, Fl Ind, Ed CBC, 648 | 992 |
| Veta ~ Jangh pala, HIND, Jhan, Beno (These vernacular sames are applicable to all Charas, indeed to most submerged plants) Habitat —There are a large number of species both of Chara and Nitella | .} |
| found in tanks and pools of water near Calcutta during the cold and hol season | : } |
| Domersia VV Atkinson | DOMESTIC. |
| Roxb), 15 | sugar, |
| employed use this I | 993 |
| used in the finished exceeding a went | } |

CHARCOAL.

994

Tumbers used for Charcoal.

Charcoal, see Carbon.

CHARCOAL, Timbers used for-

Abies Smithiana. Acacia arabica. A. Catechu A. modesta Adhatoda Vasica (gunpowder) Albizzia procera. A. stipulata. Anacardium occidentale Anogeissus latifolia. Betula cylindrostachys Boswelka serrata. Butea frondosa (gunpowder) Cajanus indicus (gunpowder) Callicarpa arborea. Calotropis gigantea. Casearia glomerata. Cassia Fistula. Castanopsis tribuloides. Colebrookia oppositifolia (gunpowder) Corchorus capsularis (gunpowder) Cornus macrophylla (gunpowder). Cynometra polyandra Daphne mucronata (gunpowder) Dillenia indica. D. pentagyna. Echinocarpus dasycarpus Ehretia Wallichiana. Elæocarpus lanceæfolus. Eucalyptus Globulus Eugenia tetragona Euphorbia antiquorum /J. . . T

Excæcaria Agailocha Ficus cordifolia. F. infectoria. F. religiosa. Hippophæ rhamnoides lumperus excelsa. Lagerstræma parviflora. Mangulera indica Mimosa rubicaulis (gunpowder). Phyllanthus Emblica. Pieris ovalifolia. Pinus excelsa. P. longifola Premna latifolia. Prosopia glandulosa. P. spicigera Ouercus Hex. O Incana. O semecarpifolia. spicata. Rhododendron arboreum. Salız tetrasperma (gunpowder) Semecarpus Anacardium. Sesbania ægyptiaca (gunpowder) Sponia orientalis (gunpowder) S. politoria (gunpowder) Stereospermum suaveolens Tamarıx artıculata. Terminalia myriocarpa T tomentosa Xylosma longifolium. eggal encored nor than not

995

tion of Anogeisses and Boswellia, are not specially mentioned by writers on the subject as being good for fuel. These trees may, however, he added to the above list. Dr. Schich; in his note, estimated that to produce to tons of pig ron a day, 372,604 maunds of charcoal would be annually required, or say 1,800,000 maunds of fireward.

Chaulmugra, see Gynocardia odorata, R. Br , Bixinez.

Chavannesia esculenta, A DC, see Urceola esculenta, Benth.

Chavica Betle, Miq , see Piper Betle, Linn , PIPERACEE

C. officinarum, Miq, see Piper officinarum, C DC.

C. Roxburghii, Miq, see Piper longum, Linn

Chay root, see Oldenlandia umbellata, Linn ; Rubiace E.

| | lopodiui lbum. |
|---|---|
| Cheep, see Shells Cheeronjee (chironji or chirauli) oil, see Buchanama latifolia, Roxb.; Cheeco, see Ghi. ANACARDIACEE. | |
| Cheese, see Ghi. [Anacardiaceæ. | ŀ |
| Cheilanthes tenuifolia, Sw.; Filices. Vern.—Nonha, dodhart, Santal. The Reverend A. Campbell writes that the Santals prescribe a preparation from the roots of this fern for sickness attributed to witcheraft or the evil eye. | 996 |
| CHEIRANTHUS, Linn.; Gen. Pl, I., 68. | ĺ |
| Cheiranthus Cheiri, Linn; Fl. Br. Ind., I, 132; CRUCIPERE. THE WALL-FLOWER. | 997 |
| | |
| References Stemart, Po Pl., 13; O'Shaughnessy, Beng, Dupens 186; | |
| Habitat.—Cultivated in gardens in North India, but is not indigenous; known as "Viole gialle," or yellow violets. | OIL. Flowers. |
| pur ene | 998 |
| son, M. D., Dijnori, uphrodisiac " (Surgeon J. Ander- | MEDICINE Flowers, 900 Petals, 1000 Seeds. |
| | 1001 |
| CHENOPODIUM, Linn., Gen. Pl, III, 51. | 1002 |
| A genus of annual or perennial herbs, belonging to the Natural Order | |
| too d or ssed. | 1 |
| There are about 50 species of the genus, met with in the world. These are distributed in all climates. India possesses seven species, with perhaps numerous varieties and cultivated forms of most of these. | |
| Chenopodium album, Linn; Fl. Br. Ind, V., 3; CHENOPODIACEE. THE WHITE GOOSE-FOOT. | 1003 |

Syn. - C. viride, Linn ; Roxb. Fl. Ind., II , 58.

CHENOPODIUM album.

The White Goose foot

Vr--

References. -Royb, Fl. Ind., Ed. C.B.C., 260; Stewart, Pb. Pl., 178,

Muraton throughout the tropic and temperate Himbliogen

from Kashmir to Sikkim, ascending. Thet to 14,000 feet. General in the 1 Bengal, Western and Southern India. There are various cultivated and

scribes three of these: (a) album proper, chandan betú of Bengal; (b) viride,

C. Quinos:-

Vetn.—Mustakh, Kashmir; Gaddi siángar, bajari banj, ratta, Rav.; Siriári, Bias, Bithá, báthá, takú, Sutlej; Gniú, Ladar, Pb.

The leaves of this plant "are eaten as a pot-herb on the Sullej, but the plant is chiefly cultivated for its grain, which is considered better than buck-wheat."

DYE Plant. IOO4

medicine. 1005

Hindustan, which duretic"

Special Opinion.—§ "Considered laxative and recommended for use by Saskert writers in the form of pot-herb in piles" (U. C. Dutt, Cent Medical Officer, Serampore).

FOOD. Plant. 1000 Seeds. 1007

C 700

CHENOPODIUM Mexican Tea The Jerusalem Oak. Botrys. Domestic Uses -Baden Powell says that this plant is used in the DOMESTIC. 1008 Panjab "to clean copper vessels preparatory for tinning them" Chenopodium ambrosioides, Linn, Fl Br Ind, V, 4. LOGG THE SWEET-PIGWEED, MEXICAN TEA Syn -C VALPINUM, Wall, AMBRINA AMBROSIOIDES Vern -Herba Santa Maria in Brazil In Chili this is known as Culen References -Dals and Gibs , Bomb I'l Suppl , 73 , Bent and Trim , Med Pt . 216 facemes MEDICINE. Medicine - This is said to afford an essential oil to which the tonic and Oil antispasmod c properties of the plant are attributed. It is commonly IOIO reported that this plant is used as a substitute for the officinal C. anthelminticum, having in a milder degree the anthelmintic properties of that plant. It is employed in pectoral complaints and enjoys the European

various species not being distinguished

Food.-This plant affords the Mexican tea. C. Blitum, Hook f | Il Br. Ind , V , 5 Syn -BLITUM VIRGATUM, LIMIN

Officinal preparation an infusion come hat som I h al a ab

Vern -Sundar ()), hupald (C), PB

References - Stewart, Po Pl , 177 ; Von Mueller, Extra Tropical Plants

Habitat -North Western India . Kashmir, altitude 8 500 feet and Stewart found the plant wild in in the Trans-Indus at altitudes

reputation as a useful remedy in nervous affections, particularly chorea

ie fruits furnish a red dve " Food -Stewart remarks that "the extremely insignd PRUIT is sometimes

mistaken by Europeans for a kind of strawberry, and which it much resembles. In Ladák the LPAVES are eaten as a not herb "

C. Botrys, Linn , Fl Br Ind , V , 4

THE JERUSALEM OAK

Sva -C ILICIFOLIUM, Griff Notul , IV , 337 References -Dals & Gebs , Bomb Fl Suppl , 73

Habitat -Temperate Himálayas from Kashmír to Sikkim at altitudes from 4,000 to 10 000 feet. Tibet 11 000 to 14,000 feet. Stewart says it occurs at Peshawar, and Dalzell that it was originally introduced into

Bombay but has now gone wild. A weed of fields Medicine - Reported to be used as a substitute for C anthelmenticum and to possess the same properties as C. ambrosioides According to U S Dispensatory it has been used in France with advantage in catarrh and humoral asthma The officinal preparation is an oil.

FOOD. 1011 1012

> DYE. FIOI FOOD. Fruit. IOI4 Leaves. 1015 DIOI

MEDICINE. 1017

| 208 | Dictionary of the Economic |
|--------------------------------|--|
| CHICKRAS tabulari | |
| 1018 | Chenopodium murale, Linn f Fl Br. Ind , V , 4. Vern — Bátá, káránd, kharatua, PB |
| F00D. 1010 | References.—Stewart, Ph. Pl., 178 Habitat.—General in many parts of India from the Panjab to the Gangetic Valley, the Deccan, and South India. Food.—Used as a pot-herb in the Panjab |
| 1020 | C Quinoa, an American species, has once or twice been tried in India, but apparently with little success (See Church, Food Grains of India, p 110) |
| | Cherry, see Prunus Cerasus, Linn., Rosacez. |
| | Chestnut, Horse, see Æsculus indica, Colebr (A 567), and Æ. Hippocastanum, Linn (A. 573); Sapindace. |
| | Chestnut, Sweet, see Castanea vulgaris, Lam, Cupuliferæ Chestnut, Water, see Trapa bispinosa, Rovb, and T. nutans, Linn. Onagraceæ |
| | CHICKRASSIA, A Juss , Gen Pl, I, 339 |
| 1021 ` | Chickrassia tabularis, Adr Juss; Fl Br Ind, I, 568, Beddome, Fl Sylvet., 1 9, MELIACEZ |
| | THE CHITTAGONG WOOD Syn.—Switzenia Chickrassia, Roth, Fl. Ind., Ed. C.B.C., 370, C. |
| | { · · · |
| | |
| | , |
| | |
| | Habitat A large tree, native of the hills of Eastern Bengal, South |
| | Habitat -A large tree, native of the man of Bastan |
| GUM. 1022 | |
| DYE. Flowers. | · |
| MEDICINE Bark 1024 TIMBER 1025 | |
| | lt is used for ever "The wood i extensively used |
| | C. 1025 |

The Chittagong Wood Chlorophytum

CHLOROPHYTUM breviscapum

*Chittagong wood,' being imported from that d strict, though it is abundant in the mountainous parts of the peninsula. It is close grained

but tough and close grained, and, from its general situation, it is hardly known to the carpenter it grows in the warmer parts of Ceylon'' (Balfour, Cyclop)

Chicory, see Cichorum Intybus, Linn, Compositæ China Root, see Smlax china, L, Lillaceæ Choinanthus albidiflora, Thu, see Linociera albidiflora, Thw C zeylanica, Linn, see Linociera perpurea, Vahl, Oleaceæ Chircta, see Swertus Chirata, Ham, Gentianaceæ Chloride of Ammonjum, see Ammonum chloride,

Chloride of sodium, see Sodium chloride

CHLORIS, Sw , Gen Pl , III , 1165

Vern — Gand: "

jharna Pa

pur Bardiy

South India

References —

371 Dala ! Murray Pl U Dings, si a 12 Diais, Cat Kaw Frod , Paris Exh., 76

grows

hey do FODDER.

1027 1028

1020

1026

CHLOROPHYTUM, Ker , Gen Pl, III., 788

Chlorophytum breviscapum, Dala in Kew Journ, II, 142, [Lillacez

Vern -Bimpól Sing
References -Dals & Gibz Bomb Fl, 252 Thwailes, En Ceylon Pl, 339, Baker, Linn Soc, XV, 321, Treasury of Botany, II, 1280

339, Baker, Linn Soc. AV, 331, Treatury of Bolany, 11, 1260

Habitat—Frequent in the Malwan District, Bombay, in rocky Isitu at ons C Heynel Baker, a nertly all ed species met with in the southern and central parts of Ceylon, 1t no great elegation

C 1029

270 CHI.OROXYLON The Ind.an Satin-wood Swietenia. MEDICINE Bulb. 1030 cending the rinnalaya to 5,000 teet in altitude. C. nepalensis occurs in the eastern sub-tropical Himalayas, while C. arundinaceum occurs on the sub-tropical Himalaya and on Parisnath in Behar, altitude 1,000 feet CHLOROXYLON, DC; Gen Pl, I, 340 1031 Chloroxvlon Swietenia, DC, Fl Br Ind, I., 569; Beld, Fl Sylrat, t 11, Wight, Ic, t 56; MELIACEE. THE INDIAN SATIN-WOOD SYL-SWIETENIA CHLOROTYLON, Rarb FI Ind , Ed. C B C , 370 Vern.—Disorra, chirra, guya, Hivo, Birna, bing, charra, bheyri,
Unix, Birna, guya, chira, bina, chira birna, chira,
kut, Barba, kutiwa, birna, chira birna birna, C. P., Soneti siri,
kut, Barba, kutiwa, Barra, Cova, Birnes Birtos, Hisla, bila,
kuti, birna, kutiwa, birna, Cova, Birnes Birtos, Hisla, bila,
birna, birna, chira, chira, chira, birna, birna,
birna, birna-chara, cummon, madada, cummon pera
- kuti and chira. burute, SING Versies, 31.70
References.—Brandis, For Fl. 74 Gamble, Man Timb, 77, Thxavles,
En Crylon Pl., 61 Dals & Gibs Bomb Fl., 39, Vonet, Hort Sub
Cal., 437 Drumck, Mal Hed W Had, and Ed., 177 Drury, U.P.,
137 Cooke, Gums and Gum resust, 22, 115 Authuson Gums and Gum
resus, 33, Athusan, Hum Ditt, 814 Ludos, U.P.I. Bomb, 49, Bal four, Cyclop , Treasury of Botany her Cat 29. Habitat.-A moderate-sized, deciduous tree, found in Central and South India, and Cerlon Common in the forests of the Konkan, Declan, and Coromandel, flower in March CUM Gum - "Satin-wood gum was contributed by Dr Cleghorn to the 1032 Madras Exhibition of 1855 The specimen in the collection from Salem (1873) refer tears, very lucent, bro ble in water mahogany surface of the solution "Another sample in the reference collection is from Cevion, paler in Gums and Gum-resins, 25). DYE Dye - "Yields a yellow dye" (C. P. Gas, rog) 1033 Oil - The tree yields a wood-oil (Beddoms) OIL.

colour, and in definite, rounded, shining, amber-coloured tears" (Cooke,

Medicine .- "The astringent BARK is prescribed sometimes by Hindu

1034 TEDICIVE Bark. 1036 TIMBER 1037

56th per cubic foot.

Garden Chrysanthemums,

CHRYSANTHEMUM

. SATIN-WOOD

verv sm as it me the bro a ton, c. furnitur of 8 to kotties (

district kotties part of the satin wood cut is exported to Madras, where it is used for furniture and general building purposes" (Indian Forester, X , : 38)

Chocolate nut and bean, see Theobroma Cacao, Linn , STERCULIACEE

CHONEMORPHA, Don, Gen Pl, II, 720 Chonemorpha macrophylla, G Don, Fl Br Ind, III, 661,

[Wight, Ic, 1 432, APOCYNACEE

SYD - COUTES MACROPHYLLA Roxb, Fl Ind , Ed C B C , 246 Vern - Gar badero, HIND , Yokchounrik, LEPCHA, Harki, SYLHET References -Brandis, For Fl. 323, Kurs For Fl Burm II, 189 Gamble Man Timb, 261 Dals & Gibs, Bomb Fl, 146, Voigt, Hort Sub Cal , 523 , Balfour, Cyclop

Habitat -A large climber with milky sap, met with in North and East

the leaves of and the roots The Flora of

British India alludes to that plant as a doubtful species

Chowlf, or Chaulf, see Vigna Catiang, Endl . LEGUMINOS E.

CHROMIUM AND CHROMITE.

οĒ in

SUC tn

information sec pairs Lean Geology, 332. Mattet, Mineralogy, 53. Balfour's Cycl , 717

CHRYSANTHEMUM, Linn , Gen Pl , II , 424

There are three wild species belonging to this genus met with in Western Thibet and one in upper Sikkim-all alpine in their character, never occurring below 9 000 feet. The Chrysanthemums of Indian pharmacy are the two garden species

C 1042

1038

GUM 1030 MEDICINE 1040

1041

1042

| CHRYSAN indi | THEMUM The Common Garden Chrysanthemum. |
|---|---|
| 1043 | Chrysanthemum coronarium, Linn; Fl Br. Ind, III, 314, Bol Chrysanthemum [Mag, 1.1521; Conposite Syn - C Page no. D. C Page 10, 10, 11, 12, 12, 13, 14, 15, 15, 15, 15, 15, 15, 15, 15, 15, 15 |
| | CYNCER CYNCER Defending Date of Cl. Date El Ch. O. All C. Ph |
| MEDICINE Flowers, 1044 Root- 1045 | almost naturalised in India, and to such an extent that Roxburgh viewed them as "natives of Bengal" Medicine.—"The FLOWERS are stated by Dalzell and Gibson to form |
| | (Pharm Ind) |
| | |
| Garlands. 1046 | an agent for opening the mouths of wounds" (Murray, Plants and Drugs of Sind) Sacred Uses —"The beautiful yellow fragrant flowers of this plant are made into garlands and offered at the shrines of Vishnu and Sina" (Balfort) |

C indicum, Lum; Fl Br Ind, III, 314; Bot Mag, 1 327, 2042,
THE COMMON GARDEN CHRYSANTHENUM OF INDIA [2556

Syn —PREHERUM INDICUM, DG Prodr, VI, 63, CHRYSANTHENUM
INDICUM Wild: in Robb Fl Ind, 26, C B, Cool Robburgh, 10all
thevaretees, Grad, 546guir (gradu in the thindictation of Tagetees erecta),
Pn, Kalsang, Ladde, General Salvahara, Bons ; Sherali, MAR;
Aktara carum, Tan, Chamunii, 121.

Chrysanthemum. Fodder Grasses.

CHRYSOPOGON acıculatus

References — Rozb, Fl. Ind., Ed. C. B. C., 602. Clarke, Composita Ind., 145, Dals & Gubs, Bamb Fl. Supp. 48, Slewart, Pb. Fl., 1141 S. Arjun, Bamb Drugs, 192, Baden Fowell, Pb. Pr., 338, Birdwood, Bomb Prod . 50

Habitat.-Commonly cultivated in Indian gardens, and is in fact only

MEDICINE. Flowers 1048

> Garlande 1040

> > 1050

gonorrhæa'

٠.

Sacred Uses .- The flower-heads are sacred to Vishnu and Simi

CHRYSOPHYLLUM, Linn , Gen Pl , II , 652

Chrysophyllum Roxburghu, G Don, Fl Br. Ind , III , 535; Bedd , Fl Sylv , 1 276 , MELIACER THE STAR APPLE

Syn -C ACUMINATUM, Roxb , Fl Ind , Ed CBC , 201 The Det torn Dete D to att Ace

Thwaitee En Ceylon Pl 174, Dals & Gibs, Bomb Fl 138 Hori Sub Cal, 340; Lisboa, U Pl Bomb, 83, Balfour, Cyclop Habitat -An evergreen itree of Bengal, Burma, the Western Ghats,

and Ceylon Food -FRUIT edible Roxburgh says "The fruit ripens in October.

FOOD Fruit 1051 TIMBER 1052

1053

FODDER 1054

(DUMU Gas, AV, pt 1, 00)

CHRYSOPOGON, Trin, Gen Pl, III, 1135.

Chrysopogon aciculatus, Trin , Duthie, Fodder Grass, 39, GRAMINER S- 4

Habitat -A small, coarse grass, growing on barren, moist pasture

Fodder.—Cattle do not seem to like it. Its thin, straight culms, 1 to 2 feet high, flower, and the small spikelets of awned, barbed, fruits which follow, are troublesome to those who walk through the grass, as they stick

| | THEMUM The Common Garden Chrysanthemum | _ |
|-----------------------|---|------------|
| 1043 | Chrysanthemum coronarium, Linn; Fl Br. Ind, III, 314, Chrysanthemum [Mag, t 1521; Composi | Boi |
| | Sym_C Down no ne programme to a se ne to to | , , |
| | Ve | |
| | 100 | |
| | | |
| | CYNACE. References — Dals & Gibs, Bomb Fl Supp, 49, Autonson, Cat Pl, 77, Pharm Ind, 1721; Moodeen Sheriff, Supp Pharm Ind, Dynack, Stat Med W Ind, 371, Murray, Pl and Drugs, Sind, S. Arjun, Bomb Drugs, pp, Drury, U Pl, 133, Ballows, Cyclep | 99. 183 |
| | TT have A not to of the Mad terrongen nor on a 1 too n a Te | ٠A s |
| | • | |
| | almost naturalised in India, and to such an extent that Roxburgh viet them as "natives of Bengal" | |
| MEDICINE Flowers. | Medicine —"The PLOWERS are stated by Dalzell and Gibson to fo | orm |
| 1044 Root. 1045 | | |
| 10 | " | |
| | (Pharm Ind) | |
| | · · | |
| | , | |
| | , | |
| | | |
| | | |
| | | |
| | | |
| Garlands. 1046 | of 3.1na) Sacred Uses —"The beautiful yellow fragrant flowers of this ple are made into garlands and offered at the shrines of Vishnu and Siv. (Balfour) | ant a " |
| • | 1 , - , | |

C indicum, Linn; Fl Br Ind, III, 314; Bot Mag, 1 327, 2042,
The Common Garden Chrysanthemum of India [2556 Syn -- Pyrethrum Indicum, DC Prodr, VI, 62 CHRYSANTHEMUM INDICUM Willd in Roxb Pl Ind, Ed, C B C, 604

W. Company Comp Tagetes erecta), , Shevats, MAR ;

CHRYSOPOGON Chrysanthemum Fodder Grasses aciculatus References —Rorb Fl Ind , Ed C B C 604 Clarke Compositaind, 145 Dails & Gibs, Bomb Fl Supp 48 Stewart Fb Pl 124, S Arjun Bomb Drugs, 192 Baden Powell, Pb Pr, 358, Birdwood Bomb Prod, 50 Habitat -Commonly cultivated in Indian gardens, and is in fact only MEDICINE Flowers 1048 calculus and also to remove depression of spirits. Drury says the "natives of the Deccan administer the plant, in conjunction with black pepper, in gonorrhœa" Garlands Sacred Uses -The flower heads are sacred to Vishnu and Siva 1040 CHRYSOPHYLLUM, Linn , Gen Pl. II, 659 Chrysophyllum Roxburghu, G Don, Fl Br Ind, III, 535. 1050 Bedd, Fl Sylv, 1 236, MELIACEE THE STAR APPLE Syn -C ACUMINATUM Roxb, Fl Ind Ed CBC 201 Vern -Petakara Beng , Pithogarkh Ass Hali, hali-maru KAN , Tarsis tarsiphala Bons , Tarsi, MAR , Lawula Sing, Thankya, than kya 8,242. Voset. Habitat -An evergreen tree of Bengal, Burma, the Western Ghats, and Ceylon FOOD Fruit Food -FRUIT edible Roxburgh says "The fruit ripens in October. 1051 TIMBER 1052 CHRYSOPOGON, Trin, Gen Pl, III, 1135 Chrysopogon aciculatus, Trin , Dulhie, Fodder Grass 39, GRAMINEE 1053 Syn -ANDROPOGON ACICULATUS Linn (f Rein) Roxb, Fl Ind. Ed Habitat -A small, coarse grass, growing on barren, moist pasture

Fodder -Cattle do not seem to like it Its thin straight culms, t to 2

feet high flower, and the small spikelets of awned barbed, fruits which

follow, are troublesome to those who walk through the grass, as they stick

FODDER.

1054

1055

| CICER | |
|------------|--|
| arietinum. | |
| | |

Fodder Grasses The Common Gram

to the stockings and produce until removed a pricking and itching sensation As soon as the spikelets appear cattle refuse to eat the grass Chrysonogron corruleuts. Nees. Duthie. Fodder Grasses, p. 20

> Syn — Rhaphis Cerulea Nees Vetn — Dhaulan Pb Khar, Salt Range Dhaula Siwalik Range, Ghaeta, Kumaon, Tigri, Bundelkhand, Pálla paggar gadi, Chanda, Yhingra ka jhara, khidi, Berar

Shingra ka jhara, khidi, BERAR
Habitat.—A common grass on the hilly tracts of Northern India,
tally on stony or sandy soils

FODDER. 1056 1057

FODDER.

1058

1050

FOUNER

1000

1001

usually on stony or sandy soils

Fodder —On the Siwalik range it is extensively used as fodder

C gryllus, Trin , Duthie, Fodder Grasses, 40 Syn -C Royleanum, Nees Andropogon Gryllus, Linn

Syn — C ROYLEANUM, Nees ANDROPOGON GRYLLUS, Lin Reference — Authison, Cat Pb Pl, 176

Habitat —The plains and hills of the Panjab and N-W Provinces Fodder —Mueller says it is a useful fodder grass in Australia

C. montanus, Trin, Duthie, Fodder Grasses, p 40.

S70.—C parviflorus, Benth, Andropogon montanus, Roxb

Vern —Ballak Raj
Habitat —The hilly parts of Northern India (Mount Abu)
Fodder —In Rajputana it is said to be viewed as excellent fodder,
and the grain is also sometimes collected and eaten by the natives

Cicca disticha, Linn, see Phyllanthus distichus, Euphorsince.

Cicca disticha, Linn, see Phyllanthus distichus, Euphorsince.

Ciccandia hyssopifolia, W & A, see Enicostema Juttorale, Blume, f GENTALAGE.

CICER, Linn, Gen Pl, I, 524
Cicer arietinium, Linn, Fl Br Ind II, 176, Wight Ic, 1 20
[LEGUMINOSE]

THE COMMON GRAM OR CHICK PEA, CECE II GRABUNZOS, Sp Vern — Chola bát, but kalai Beng Chana chunna Hind But, Suntali Channa chola, Pe Cholá chand Rajeutana, Chana

| or Chic | k Pea | | CICER arietinum |
|--|---|---|---|
| the grafithm of Dana 2 miles to a not a not to a | the Gr lomans a that it Europe | of Cicer eeks in Homer's | HISTORY |
| Eu Th | OC, Orig Cult Pl | a stock originally | CULTIVA- TION |
| N II Provinces—The varieties need in 14 Ci, April, and May heaviest clay to the lightest loam, it does not require so fine tillage irrigation and a deep rather than winecessary. The * | The soil for gran | of a cck own The at to dily is a rearres from the refer the former ley do, nor much | N W P Large 1062 Small 1063 Cabuli 1064 |
| plants bushy The cost c follows — | ٧ | , is as | |
| Plough ng (four t mes) Seed (Solb) Sow ng Resp ng Thresh ng Clean ng | | R a ¢ 1 0 0 2 0 0 0 14 0 1 9 0 2 0 0 0 6 0 | |
| Pent | TOTAL | 3 0 0 | |
| | GRAND TOTAL | 12 13 0 | |
| Т 2 | | C. 1064 | |

The Common Gram

arietinum.

The approximate average outturn for unirngated land in the several

c. p 1065 divisions varies from 5 to 8 maunds per acre in the case of gram, and from 6 to 9 maunds in the case of gram barley and gram wheat. For irrigated land the outturn is estimated at 12 maunds for gram alone,

est return was in Narsinghpur, where 873h to the acre were obtained, and the lowest, 237h, in Chanda Taking the mean of all the returns in the eleven districts the yield may be expressed at 587h. In the Chanda Settlement Report, it is stated that two kinds of gram are grown—the grey and the white It is remarked that gram is not a popular crop in the Wardah District.

BOMBAY.

BOMBAY — There are 692,295 acres under this pulse, and in Sind 34,166 acres Therop experiments made in the Bombay Presidency receil for the control of the control

1066 Small 1067

The following extracts from the Bombay Gazetteers will be found

Kills weeds Improves soil

> Justification of mixed crops

Wheat and

plained of by European merchants is the consequence of either of two things—1st, the wisful parchase of such admixture, for the natives of India regularly eat the two grains mixed, and to meet this demand the Indian beat or

seems every reason to suppose that a certain amount of willul—one inight almost say criminal—admixture of gram takes place in wheat sold as pure wheat Such admixture is mainly, if not entirely, effected by the dealer not by the cultivator.

| • | 2 / 044475 07 - 114125 |
|--|--|
| CICER rietinun | or Chick Pea. |
| CULTIVA- TION. | . ' ' ' ' ' ' ' ' ' ' ' ' ' ' is the m district, enther wal |
| Hola. 1068 Dal 1069 Puran-poli 1070 Phutanas 1071 | |
| | manured and irrigated lands. In Belgaum gram is known as kadi |
| PANJAB 1072 | for the grown provided to the acre various from 32 to 48B. Rain in Mand April, so beneficial for wheat, and indeed abundant rain or prolong cloudy weather at any causes the plant to significant. |
| | sha menet naj ships amoni ban |
| Red 1073 Black. 1074 White. 1076 | C. 107 |
| | C. 1070 |

| 270 | Dictionary of the Economic |
|---|--|
| CICER arietinum. | The Common Gram |
| CULTIVA- | gram area , ha s n = sk = st + 1 |
| Phalli 1077 Amin 1078 Improves soil | rabi crops. The effect of gram "The crop is not only profit- e and improve the land for the In Rajputana and Central India, gram is also grown, and especially |
| 1070 CENTRAL INDIA 1080 BENGAL Straw-colour- ed 1081 Rabull 1082 | along with wheat. There is nothing, however, of a special nature to record Resumal |
| BURMA. 1083 | 25 In Burma — Mason says gram is grown extensively by the Burmese Gram as a rotation with wheat — In a recent lecture, on Indian |
| | |

| or Chick Pea | CICER arietinum |
|--|--------------------|
| what has been said, it may be inferred that adulterat on of gram with wheat grain is more an accident than a necessity of the habit of mixed cultivation GRAM AS AN ARTICLE OF CATTLE DIFT —In an address delivered before | TION |
| ORAM AS AN ARTICLE OF CATTLE DIST —In an address delivered before | Gram recom- |
| country has always a much larger percentage of pulses in it than in Burope. The animals three admirably on such a diet, and the opinion may be advanced that where muscular strength is required a diet that | |
| · | |
| | |
| of oats at a 1nd an corn 10 optain the indispensibly necessary at our to albuminoids from an English diet the animal has to eat a greatly | 1 |
| • | I |
| , | ļ |
| , | |

scribed by Principal McOall of Glasgow, in which the tongue becomes paralysed W be said that our and that it har

and that it har tried to the exte The writer has

280

CICER

The Common Gram

These remarks regarding anthrax have however, been made in this place mainly to prevent undue alarm, until Professor Wallace's suggestions regarding a possible connection between it and gram-feeding have been proved correct.

CHEMISTRY CHEMICAL PROPERTIES OF GRAM

Professor Ghurch, in his Iood-Grann of India, gives an interesting account of this pulse, but is in error in too prominently restricting the name gram to the forms of Phaseolis Mungo. This is the case only in the Madras Presidency, throughout the rest of India the terms black and green gram are practically unknown, the word gram signifying the pulse Goternetinam, although the term horse gram is sometimes applied to the pea of Dolichos bifloris. In Madras it might fairly well bear that mame, since it takes the place of Goter anterium as a food for hoests. The Professor gives a valuable table as the result "of nine analyses of the bear from grand of of our analyses of the the peas from which the busk has been removed."

"Composition of the chick-pea.

IN 100 PARTS.

| | | | | | | _ | Husked | With Husk | In 1 lb Husked |
|--|---|---|---|---|---|---|--|--|--|
| Water Albuminoids Starch Oil Fibre Ash | : | : | : | : | : | | 11 5 21 7 59 0 4 2 1 0 2 6* | 11 2 19 5 53 8 4 6 7 8 3 1† | Oz Grs. 1 367 3 207 9 192 0 294 0 70 0 182 |

^{* 1 1} of Phosphoric Acid.

"The nutrient ratio in the unhusked peas is 1:33; the nutrient value

The unhusked peas are therefore more nutritious than the husked, and it may be concluded that the process of steeping them in water before

a high reputation.

C. 1085

TRADE AND PRICES

Very little can be learned regarding the internal trade in gram. It is extensively eaten by the natives in every part of the country, and there must therefore exist a very considerable internal trade in the pulse. The grain could be most conveniently obtained from Bombay, Karachi, or Cal-

TRADE. 1085

or Chick Pes. CICER arietinum.

The foreign trade is at present not very extensive. The following were the exports during the past five years:—

Cwt. R
183-33 37.953 8.25,674
183-34 39.264
193-34 39.264
193-35 39.264
193-36
314,695
32,1465
335,129 10,74,771
1835,85
336,129 38,406

The exports in 1870 were only 23,171 cst, valued at R94,900; but it

various Indian pulses The majority of these gentlemen agreed in

other.

Pices.—In a recent number of the publication issued by the Department of Finance and Commerce under the title of Pireste only Wages in India," Mr. O Conor has published tables which afford perhaps the most unstanding data for arriving at a knowledge of the price of gramp in figures represent seers (alb) to the rupee. Mr. O Conor's results of average origines may be thus summarised;

PRICES. 1086

| | l | II | III | IV |
|---|--------------|--------------|--------------|--------------|
| | 1873 to '76. | 1877 to '80. | 1881 to '84. | 1873 to '80. |
| Madras Bombay and Sind Bengal North-Western Provinces and | 23 63 | 17'77 | 32°05 | 20 7 |
| | 37 c6 | 11'47 | 18 45 | 14 27 |
| | 20 58 | 15'31 | 21°77 | 17'94 |
| Oudh | 25 61 | 18 36 | 24.23 | 22 48 |
| Panjab | 30 04 | 18 29 | 26.7 | 24 16 |
| Central Provinces | 31 02 | 18 1 | 27.32 | 24 56 |

It would, perhaps, be unsafe to carry these figures further; but the mean of clown IV, might give the reader an average approximation of the retail price of gram in India. But it must not be lost sight of that "gram" as presently exported means more than the pea of Cicer arietism, and includes (as perhaps do the above figures) pulses that have a lower value than the true gram.

C. P. 1087

CICER

The Common Gram

PRICES

seers to the rupee in which of course a larger quantity for the sum men tioned would mean cheapness and a less quantity dearness —

| Districts | August 15th | November 15th | February 15th | May 15th | | | | |
|--|----------------------|------------------------|--------------------------|----------------|--|--|--|--|
| Mandia Damoh Sambalpur Wardha | 45 39 15 20 | 42 27 19 8 22 | 40 29 8 19 8 21 | 40 40 24 | | | | |

The difference between the prices at which the cultivates sell the produce of their fields to the dealers at harvest time and at other periods

BENGAL 1088

it is accordingly
Director of Agri
at 24 seers to the
Laking a high ex

BOMBAY IOSO change these quantities would represent 48 to 40h for its \$2d\$. Bambay—The quotation has been given in one of the \$Crop Experiments of 60 seers to the rupee or, at the rate of exchange adopted in the preceding estimates 120h for its \$2d\$ it its probable however, that this figure is much too low and that the average price in the Western Presidency bears a closer approximation to that given for the Central Prowinces

rupce after harvest and 20 seers at other seasons

PANJAB IOQO and Bengai Fanjab—In the Lahore d strict according to the Gasetteer, gram is stated to be sold at 100h to the rupee (= 15 5d) In the Mooltan district, the average price for the past 20 years is given as 60h and in the Jhelam district for the past 44 years as from 68 to 110h according to the

1091

am is consider

DYE 1002 s fact is known

MEDICINE Seeds 1093

Gram Vinegar 1004

C 1094

CICER

or Chick Pea. acietinum. afterwards published in the Records of the Bombay Government (xvi | MEDICINE. pecunar to the dew nurther on at p 63, he observes that the natives | is sold 1 some given The fresh juice of the leaves administered with success in The acid liquid is employed in the treatment and the patient

Chana-amta.

| • | | | | | | | |
|--|---|--|--|--|--|--|--|
| CICER | m The Common Gram | | | | | | |
| MEDICINE Chana-khar | ness' (Brigade Surgeon J. H. Thornton, B.A., M.B., Monghir) "Ti | | | | | | |
| | | | | | | | |
| Í | • | | | | | | |
| 1 | (Native The also ir | | | | | | |
| CHEMISTRY 1095 | cnotera Lurgeon Major 7 J. L. Ration, Salem) 'It is believed to have alterative properties "(Altgarh) Chemical Composition—The seeds contain, according to Balfour, mostuute 1080 per cent, indirect constituent (ash) 3 12 per cent, and statchy matter 62 20 per cent. Dr Warden however, gives the following composition "One hundred parts without husk contain water 13 30 nitrogenous matters 22 7, fat 3 76 starch 63 18, and mineral matter 2 to (Parket)" (Conf "with Church's Andreus of Pulse on a Presous Dare) | | | | | | |
| F00D I006 Parched Gram. I007 | Food —Gram forms the chief food for horses Amongst the poorer classes of natives parched gram (chabena) is much eaten Masson informs us that in the Panjabit is made into bread, which was a favourite article of food with the Sikh sirdars The natives also eat it boiled in the form of | | | | | | |

Ragout 1008 Young plants 1000 FODBER 1100

ries instead of vinegar

The following account of gram given in the Treasury of Bolany may be quoted here in India the seeds form one of the pulses known under the name of 'Gram' and are greatly used as an article of food by the natives being ground into meal, and either eaten in puddings or made into cakes. They are also toasted or parched and in this state are comonly carried for food on long journeys. Rolled in sugar candy, these toasted peas form a rough sort of comfits, and gram flour made up with sesamum oil and sugar candy is an Indian sweetimen?

Cicer Lens, Willd, see Ervum Lens, Linn

1101

C. soongaricum, Steph , Fl Br Ind , II , 176 Vern.—Tishu, jamáne banyarts, sárri, serri, PB

References — Stewart Ph Pl, 63, Murray, Drugs and Pl Sind 120, Church Food grains of India, p 131

Habitat -Met with in the Western Himalayas, temperate and alpine

Pood Seeds 1102 Shoots 1103

gram it eaten by the people The Young Sugar are prepared as a pickle by the Chinese, and a vinegar is made from the leaves. The latter are often covered by a viscid exudation, with a strong aromatic odour.

The Wild or Indian Endive.

CICHORIUM Intybus

IIO4

Attchison states that in Lahaul shoots are used as a pot-herb, and that the peas are eaten there, as they are, both raw and cooked, in parts of Ladak" (Stemart, Ph. Pt. 67, Huddron, Missuon to Yarkand)

CICHORIUM, Linn , Gen Pl , II , 506

Cichorium Endivia, Linn , Fl Br Ind , III , 391 , Compositie.

THE GARDEN ENDIVE

Pl, 81, DC, 'Ed, Lisboa,

a native of

is no doubt of its having been used as an esculent food from a very early period by the Egyptians, through whom the Greeks and Romans probably became acquainted with it (Treature of Botans). The Arabs call

W Ina)

Medicane.—"Endive is much valued by the hatims as a resolvent and ions complaints much as traxas the four lesser cold seeds of old East" (Pymack). The Root is rifuge, given in 'munjus', the the seed is used in sherbets'

MEDICINE, Seeds, 1105 Root 1106

Food —"Endive, radishes, and succory are mentioned by Ovid as forming part of a garden salad, and Pliny states that endive in his time was eaten both as a salad and potherb. As such it has been used in

F00b.

C. Intybus, Linn ; Fl Br Ind , III , 391 , COMPOSITE

1108

THE WILD OF INDIAN ENDINE, CHICORY, OF SUCCORY, VERN.—Kann, HINO, PERS; Hindyda Arrs; Kashina-tran, Tam, Kannesthilli, Tax, Hand gal, sachal, kash, Pa Kisan, Gu, Keferences—Prondis, Far Ft, 77, Kara, For Pl Barn, 77 Steam, Copan of Call, Pl, 81, 20, Copan of Call, Pl, 82

Habitat.-North-West India, Kumaon, distributed westward to the

Atlantic § "In the plains of the Panjab it is cultivated by natives as a pot-herb (sig), and may be an escape, truly wild at 4,000 to 11,000 feet" (Surgion-Major J. E. T. Attehison, Simla)

CICHORIUM Intybus

The Wild or Indian Endive.

HISTORY.

History —"The wild perennal chrony, which is cultivated as a salad, as a vegetable, as fodder, and for its roots, which are used to mix with coffee, grows throughout Europe, evept in Lapland, in Morocco and Algeria, from Eastern Europe to Afghanstan and Beluchistân, in the Panjab and Kashmir, and from Russia to Lake Balkalı ni Siberia. The

CULTIVA-TION 1100

fodder plant is simple enough. The seed is sown broadcast upon land that has been dug or deeply ploughed, from seven to twelve pounds per

ions. When the plants are about the inches in height, carefully noe them and single out, leaving them about six inches apart, after the usual method in turnip culture—that is, by boys following the hoers. Some recommend that the seed be soon in a bed, and when the plants are fit for transplanting—which will be when about five inches high—they are to be set out in rows nine inches apart, and at six-inch intervals from plant to plant in the rows. In either case, the land must be kept clean, and well

course of cropping pursued for a few years, and it may then be again sown or planted with chicory

"In preparing the land for a root crop, deep ploughing is recom-

be carefully dug out and destroyed, when the tune for taking up has arrived, because, if allowed to become mixed with the bulk, they will spoil to the sample 7 sown broadcas being easily tuche inches tuty used M as to leave spaces between them in the rows, each about sever eight as to leave spaces between them in the rows, each about sever eight as to leave spaces between them in the rows, each about sever eight as to leave spaces between them in the rows, each about sever eight as the leave spaces between them in the rows, each about sever eight as the leave spaces between them in the rows, each about sever eight as the leave spaces between them in the rows, each about sever eight as the leave spaces between them in the rows, each about sever eight as the leave spaces between them in the rows, each about sever eight as the leave spaces between them in the rows, each about sever eight as the leave spaces are the leave spaces are the leave spaces.

of

is adopted' (Morton, Cyclof of Agri , I , 457).

CICHORIUM

| | Chicory an | d Coffee | | | | Intybus. |
|---|---------------------------------|--------------|---------------------|----------|---|------------------|
| ``` | | , | - | ٠٠. | | CULTIVA- |
| | | | | | | |
| | | | | | | |
| selling at 2 annas a s sent to the Lahore Ev Great Britain imp s extensively grown | chibition from orts annually | nearly eve | ry distr 200.000 | cuts of | the root It | |
| medicinally in the P | anjab Itco | ntains nitra | | of the s | The seeds eed is used r and used of potash, of chicory | MEDICINE 1110 |
| | | | | | (Assist int the liver 'A strong ous vomit- '" Much t Surgeon | |
| PI P P- | וה אל | | | ņ | vegetable" ne of Barbe | FOOD IIII |
| | | | | | | |

roots once constituted half the food of the poorer classes, as they probably do at the present day "Within the last few years, grocers mixing chicory

Chicory in

threaty to accur an east the English grocer requires to do is to send pure "coffee" when he advertises and be anything he pleases to ma

ground, Roasted chicory

CIMICIFUGA fœtida.

Chicory and Coffee: Black Snake Root.

FOOD.

contains a volatile empyreumatic oil, to which its aroma is due, and a bitter principle. It contains no caffeine. Infused in boiling wa'er it yields a drink allied in flavour and colour to coffee. It is largely used to women are said to be regular. Warden, Prof. of Chemistry,

The following extract, relating to the fact of the chicory roots being a new source of alcohol, was published in the Tropical Agriculturist of 1st

December 1832, page 495. - also p 57 —
"According to Erifindungen und Erfahrungen, the celebrated coffee substitute, chicory, seems likely to become of importance as a source of alcohol The root contains an average of 24 per cent of substances easily convertible into sugar, and the alcohol obtained by its saccharification, fermentation and distillation, is characterised by a pleasant aromatic taste

ADULTERA-

III3

MEDICINE.

1114

Adulterations - "Roasted chicory is extensively adulterated. To colour

DESIGN GONE-DISCHALL AND GARKEL HIVES. OF NOTES AND DIMEKES (I), 4IE SUI-STANCES which are said to have been used for adulterating chroty. A mixture of roasted pulse (peas usually) and Venetian red has been used under the name of *Immbro* founder for the same purpose** (*Ur* 1 Diet.*, Art and Manuf). A recent examination of certain **Coffee mixtures' revealed the fact that roasted cockroaches and from rust were employed as adulterants. (See Coffee arabica, para *Adulterants*.

CIMICIFUGA, Linn; Gen Pl. I. 9.

and great purity" (Chemist and Druggist).

Cimicifuga fætida, Linn. ; Fl Br Ind., I, 30, RANUNCULACEE.

Vern - Junti, PB

References.—Stewart, Pb Pl, 2, Treasury of Bolany, Kew Official Guide to the Museum, 8

Habitat —Found in the temperate Himálaya, from Bhután to Kashmír, altitude 7,000 to 12,000 feet.

Medicine.—The ROOT is said to be poisonous. In Siberia it is used to a curve away bugs and fleas, Under the name of a nearly allied plant (Actua spicutal), the writer has already referred to this plant, and chiefly with the view of attracting attention to these useful but apparently neglected plants.

Garrod, in his Materia Medica, calls Cimiclinga racemosa, Linn, the

made known to Europe in Toyo, and was Scientificany not unto a

Black Snake Root: Cinchona Bark,

CINCHONA.

cinal virtues. C. racemosa is chiefly prescribed in the form of fincture, and employed in rheu of and chronic bronchial

MEDICINE.

been used to reduce A section of the root

A section of the root

shaped sections, with a thick brittle intains a resinous active principle Macrotin In its action this drug and colchicum on the other. It is

most useful in acute rheumansm, and a powder of the root is perhaps the best mode in which to give the drug, in doses of 20 to 30 grains (Royle's Mat Med. ed by Harley)

Special Opinion — § ** A poultice prepared of the fresh leaves is used here, and said to be very useful in rheumatic affection of joints" (Surgeon C. F. W. Metdoxs. Burrisal)

CINCHONA, Linn, Gen Pl, II, 32

Cinchona, Linn; Rubiscez.

CINCHONA BARE, PERUVIAN BARE, JESUIT'S BARE, COUNTESS'S BARE, ECORCE DE QUINQUINA, Fr, CHINARINDE, Germ.

1115

tteers - Burma, respondence and II, 64, 105, 143, tratton Reports, Cultivation su

Arts, and Man., 732, 401, Ke 11-13, 1881, 10 1882, 18-19, Ker 33; Kew Offt. Guide to Bot. C monds, Teop. Ages, 38, 78

Dr. King of Calcutta, and Mr. Lawson of Madras, each contributed a historical account of the Cinchona cultivation of India, in connection with the samples shown by them at the Colonial and Indian Bethbitton held in London in 1896. The writer has availed himself of these notes in

U

CINCHONA.

Crachona Bark.

compiling the present article, but has at the same time verified the historic and other facts by consulting the works enumerated above

Habitat.—Dr. King says. "The trees producing the medicinal barks are all natives of tropical South America, where they are found in the dense forests of the mountainous regions of the western parts of that continent at a height of from 2,500 to 9,000 feet above the level of the sea, and in an equable but comparatively cool climate. The Cinchona-producing region forms a crescentic zone which follows the contour of the coast line, but nowher activally to have the activation of the coast line, but nowher activally to have the activation of the coast line, but nowher activally to have the activation of the coast line, but nowher activally to have the activation of the coast line, but nowher activally to have the activation of the coast line, but nowher activally to have the activation of the coast line, but nowher activation of the coast line, but nowher activation of the coast line activation of the coast

extending to 20° S latitude.

a hundred miles in width, but

than two thousand. During its

the zone in 20°S were described by M. Weddell in his splendid monograph published at Paris in 1849"

HISTORY.

HISTORY OF THE INTRODUCTION OF THE DRUG

"The introduction of the medicinal Cinchona bark to Europe was of a Spanish Viceroy of Peru, of an attack of fever contracted ty of the bark to Europe on

year 1699. Jesut missionaries

year 1699. Jesut missionaries

essur's bark, and

ence of the tree

Jussieu, mem-

nerica, obtained
n des Plantes at
n a storm at sea
near the mouth of the River Amazon. The first living Cinchonas ever

Tona and an analysis of the Diantes

ALKALOIDS.

introduced this invaluable remedy to Europe (Aing).

HISTORY OF THE ALKALOIDS.—"The most important and at the same time peculiar constituents of Cinchona barks are the alkaloids

History of the Alkaloids.

CINCHONA. HISTORY OF THE ALKALOIDS.

| enumerated in | thefo | llowing | table : |
|---------------|-------|---------|---------|
| | | | |

Alkalord Cinchonine Cinchonidine (quinidine of many writers) Quinine Outpidine (conquining of Hesse)

Chemical composition C20 H24 N2 O Same tormula. Can Hat No Oa

Same formula C20 H25 N2 O2

so fa febr cert. alka

Оппати

the outward appearance of these being alike. With the separation of the nen alkaloids, chemical tests for their recognition began to be inserted in

bark still continues to be rated by the European quinine-makers in propor-

devoid of quinine, while those of the same species from a neighbouring

ď down to less than 1 per cent. " Among "

are a great n principles, of altogether w

CINCHONA.

History of its Introduction into India.

HISTORY OF THE ALKALOIDS.

observed, was obtained by Broughton from a bark grown at Ootacamund.
This bark afforded not less than 13% per cent, of alkaloids, among which

quinine was predominant.
"The few facts just mentioned show that it is impossible to state even

•

quinine

"As to Cross or Loss bark, the Corta Canthone paids of pharmacy, its ments are, to say the least, very uncertain. On its first introduction in the seventeenth century, when it was taken from the trunks and large branches of full-grown trees, it was doubless an excellent medicinal bark; but the same cannot be said of much of that now found in commerce, which is to a large extent collected from very young wood. Some of the Crown Bark produced in India is, however, of extraordinary excellency, as shown by the recent experiments of DeVry.

"As to red bark, the thick flat sort contains only three to four per cent of alkaloids, but a large amount of colouring matter. The quill Red Bark of the Indian plantations is a much better drug, some of it yielding 5 to 10 per cent of alkaloids, less than a third of which is quinne and a fourth cinchonidine, the remainder being cinchonine and some-

times also traces of quinidine (conquinine)

"The variation in the amount of alkaloids relates not merely to their total percentage, but also to the proportion which one bears to another. Quinne and cinchonine are of the most frequent occurrence; cinchonine is less usual, while quinnime is still less frequently met with, and never in large amount. The experiments performed in India have

HISTORY OF THE INTRODUCTION OF CINCHONA INTO INDIA.

Or. King writes "The practice of the bark collectors in the wild regions in which Cinchonas naturally grow involved the destruction of each tree felled for its bark, yet no measures were ever taken by the owners of either public or private forests to secure supplies for the future by conservancy or re-planting. Meanwhile the consumption of bark in Europe steadily increased, and, as an adural result, praces roses, and fears began to be entertained that the supply would ultimately fail. The British and Dutch Governments being, by reason of their tropical possessions, the

INTRODUC-TION INTO INDIA.

History of its Introduction into India.

CINCHONA.

the preservation of the natural forests, that great fears have been entertained that the supply might altogether cease, or be obtainable only at a price which would place it beyond the reach of the mass of the community"



"Dr. Royle's recommendations, although approved of, were not at the time acted upon, but were allowed to remain in abeyance until 1859, when the increasing deposit only increasing deposits only increasing deposits of the increasing depos

constantly increasing tion of Government seemed almost certai sale destruction of the

.

Garden, recommended that an intelligent and qualified gardening collector should be deputed for a couple of years to the mountains of South America for the purpose of exploring the Cinchona forests, and of procurin

the matter, as also did the late Dr. I. Anderson. The Medical Board

to be found bark forests. Spruce and the castern Markham

which he h. the inhabitants and flora of regions he traversed Landing at Islay in March 1860, Mr. Markham, accompanied by Mr. Weir (a practical

204

CINCHONA.

History of its Introduction into India

OF THE INTRODUCTION INT great plain of western Brazil. Mr. Markham penetrated this valley

this valley inguished Hasskarl; short by 97 plants avata and

micrantha.

"Instead of sending these plants direct to India, Mr. Markham was compelled by his orders to take them to India and Panama, England, the Mediterranean and the Red Sea, and thus to expose them to transhipments and alterations of temperature which ultimately billed them all

shipments and alterations of temperature which ultimately killed them all "About the time Mr. Markham was exploring the yellow bark forests of Southern Peru, Mr. Pritchett was collecting seeds and plants of the

n the northto Lima in ad of young

The task of a by Messrs. adge of the

Andes, and he was thus enabled very speedily to form at Limon a nursery of young plants of Cinchona succirativa, which were ultimately conveyed safely to India by Mr. R. Gross. A quantity of seeds of this species was also collected and sent to India by post. Mr. Gross was subsequently commissioned to procure seeds of the pale barks in the forests near Loxa, and this commission he executed with great success. A third expedition to New Granada was made by the same collector with the object of securing seeds of the Carthagena barks, Cunchona lancifolia and pitayensis. The seeds obstained by Mr. Gross were sent to Kew, where they

Kew, where some were retained and sown. A few of the plants brought from South America were also retained at Kew, so that a sort of reserve dept was formed there in case of failure in India. For the successful introduction of Cinchona into India and other British possessions, Correment are largely indebted for advoce, as well as for more active.

History of its Introduction into India.

CINCHONA.

two months later. In the month of December 1861, Dr. Anderson delivered over to Mr. McIver at Ootacamund the plants he had brought from the Cinchona plantation which the Dutch had just succeeded n establishing in Java Dr. Anderson had been sent by the Government of India

he courtesy of the Dutch authorities he 50 plants of Cinchona Calisaya, four ts of Pahudiana On the 4th March or crown bark seeds from Loxa archona to India became thus an accomHISTORY OF THE INTRODUC-TION INTO INDIA

South India.

plished fact" (King).

Introduction into South India.—"The success of Cinchona succinibra and officination on the Nigaris has been tremarkable. Not only do the trees grow luvurantly, but their bark is ticher in alkaloids than much of the Cinchona bark imported from South America. The Government plantations there, according to the returns for 1884-85, contain 1,618,748 trees of vorts. The Nilgari plantations were under the superintendenced

Mr. Mctiver until his death, since which they have been under Mr. M. A. Lawson.

"Encouraged by its success on the Nilgins, Cinchona cultivation was warmly taken up by European residents in the other high lands and hill ranges of the Madras Presidency. The coffee planters of Wynaad put ut a good many red bark trees on their estates, and these are found to

tanger of the insular accounty, Jife course planters of wynaad put out a good many red bark trees on their estates, and these are found to grow well. In South Canara a small plantation was formed in 1669, at a place called Nagooli, aboue the Koloco Ghát, and at an elevation of 2,500 feet above the sea, but the experiment there was pronounced by the Maderas Government as unlikely to be productive of useful Canjam district.)

Madras Government and the Mahendra Mountain, in the Madras Government of the Mahendra Mountain, in the Madras Government of the Mahendra Mountain, in the Madras Government.

Madras Governme the Forest Departhe Nulla Mully

barks), and, a si

mivelly, and She Cinchona was take

Cinchona was taken up to a greater or less extent, both by private planters and the Government" (King).

most probably thrive best. For the hardier kinds Mt Markham

CINCHONA

History of its Introduction into India



this ease is the result of the patience and intelligence which Mr McIver

tions Of these the following are the more important -

- (1) C officialis (2) C mode (----
- (1) C officinalis. (8) C. verde (com form).
- (2) C succirubra. (9) C zamba morada (com form)
- (3) C. Calisaya. (10) C. carthagena (com form)
 - (4) C. Ledgeriana. (11) C. Pahudiana
 - (5) C. javanica. (12) C. Humboldtiana.
 - (6) C. Santa Fe (com form) (13) C. Pitayensis.
 (7) C. morada (com form) (14) C. micrantha,

He adds "Of these, the only kinds which are largely grown in the Govern-

Bengat

Sukkim plantation has been under the charge of Dr Anderson's successors, str. Mr O B Clarke, during 1870 and 1871, and Dr George King, since the latter date Since 1866, the Sakkim plantations have

Calcutta from Ootacamund 193 plants of succurators and of the species yielding grey bark. Some of the Java plants died in Calcutta, and on the 19th January 1862 the total stock in the Botanical Gardens there from

the have

History of its Introduction into India

CINCHONA.

been largely increased, and at 31st March 1885 their contents were as follows -

| | Red (Cin- chona suc- cirubra) | Yellow (Cinchona Calisaya and Ledge- riana) | Yellow (Cinchona Calisaya verde and morada) | Hybrid (unnamed variety) | Other kinds | Total of all sorts | 1 |
|--|-------------------------------------|---|---|--------------------------------|----------------|-----------------------------------|---|
| Mungpoo Division Sitong "Rungjung", | 2,132 000 1,100,000 | 801,118 70,000 2,15,000 | 134 300 15,000 34 000 | 345,100 40,000 | 25,593 | 3,438,111 1,225,000 249,000 | |
| GRAND TOTAL OF ALL KINDS | 3,232,000 | 1,0%,118 | 183,300 | 385,100 | 25,591 | 4 912,111 | |

HISTORY
OF THE
INTRODUCTION INTO
INDIA,

"A Cinchona plantation was begun by a private company in Sikkim almost simultaneously with that belonging to Government, and more recently a second such plantation has been opened out in Bhotan. Patches of Cinchona were also planted in several tea gardens in the

Khasia hilis.

"Into North-Western Provinces —The cultivation also received a very partie trial for several years in the North-Western Provinces of India, and plantations were begun at various altitudes from 2,000 to 6,500 feet above the sea, but the plants all ultimately perished from frost A similar result followed the spirited altempt of Golonel Nassau Lees to grave.

N -W. Provinces.

Bombay.

Burma.

north of Toungoo, and about \$4,000 plants are 'non alive. But the plantation does not thrive so well as could be whyled, and it is desirable that the advice of an expert should be obtained as to the best course to be taken. It was hoped that Dr King would have visited Burns, but as yet he has been unable to do so. If the Government of Bengal can spare him, perhaps he will be able to come in May 1833. At Proon choung the cultivation of Girchona has done so poorly that orders have been given to abandon further outlay on the experiment there. About 300 hot Circhona bask were recently received from Thandoung, and the country of the

ultivation of Cinchona canist, Dr Thwaites,

C. 1116

! . It was subsequently

CINCHONA Calisava

The Yellow Bark of Commerce.

HISTORY OF THE INTRODUC-TION INTO taken up with great vigour by the very spirited planting community of that their most flourishing colony, and to such an extent was the cultivasion carried, that in the ver 1881 no less than three millions of pounds of dry Cinchona bark were exported from that island to England, and in subsequent years the exports have materially increased "(King) During the years 1885-80-81, Dr King informs the writer the annual exports from Cevino 100-bot 1s million nounds.

THE SPECIES OF CINCHONA

Those are bet are so and a real of C

will be necessary only to allude to the better known species and varieties which are cultivated in India

1117

Cinchona Calisaya, Weddell, Rubiace

THE CALISAVA BARE OF YELLOW BARE Of COMMERCE, a term also applied to the bark of C LEDGERIANA

Vern — Bárak, Dec., Shurappattas, TAM., Gradap-patta Tet. References — Krw. Reports, 1877, pp. 14. 28. 1879, pp. 12, 13. 1889, pp. 11, 25, 32, 1881, 25, 1882, pp. 18, 19, 38, Trop. Agriculturus, 1883, 700

most only second to C succernbra in point of importance in the Sikk m plantations. In a Resolution of the Bengal Government dated March 1888, it is stated that Mr Wood was of opinion that good quinine barks to the good property of the good part of the good part

tion was tot acted upon to some time that effect has, nowever, been given to it of recent years, and succentribra has been supplanted by Calisarya to the extent of about a million trees." On the other hand, the attempt to cultivate this species in the Nigier hills has been practically abandoned Calisarya was discovered by M Weddell in 1847, it is 3 native of Bolivia and South Peru. The supply of back from natural

MEDICINE Bark III8 Powder III9 Leaves II20

The Ledgeriana Bark of Commerce CINCHONA Ledgeriana uncoated, consisting almost entirely of liber, is 1 to 1 inch thick. Its MEDICINE.

Flat a of the Pnarmacopana
Structure of the Wood —Reddish-grey, moderately hard, even-grained
Pores small, in short radial lines Medullary rays fine, closely packed

TIMBER. 1121

VARIETIES OF C CALISAYA

Numerous varieties and hybrids have been distinguished of this species, especially by Weddelf The best known are var Josephiana (named after Ledgeriana, but C zamba,

Josephiana, II22 Zamba II23 Morada

are being experimentally

Ils Dr. Van Gorkum, the
sin 1873. "Our plantation
"The
outward

II24 Verde. II25 Blanca. II26

ot know
manner of harvestung, drying, and packing, but certain it is that their
treatment is highly spoken of ""There are numerous varieties of C.
Calisaya, but we possess one with which we have become acquainted,

1127

Cinchona Ledgeriana (a cultivated form)

Cinchonas, and consequently the amount of bark harvested in a given number of years is much smaller than that taken from other kinds. The bark also, when it is renewed, is less rich in quinne than the natural bark, so that the trees, instead of having their bark improved by the process of

CINCHONA officinalie

Lowe or Crown Bark of Commerce

stripping, as is the case in the other kinds of Cinchona, decrease in value, These two circumstances make it doubtful if plantations of C. Ledgeriana will, in the long run, be much more profitable to the planter than those

was certain to prove more remunerative than that of any other species. It could be propagated at lower altitudes than the others (scarcely growing above 4,000 feet), and was, from this point alone, a more economical In Chi m C T admir and a

"Ta veller. 2025 - ---

proved by tar the most productive in quinine of all Cinchona barks. The tree is a mere form of C. Calisaya Mr. Hooper, Quinologist to the Madras Government, in a recent report, remarks . "In the Ledger bark it will be noticed that there is a steady rise of quinine up to the age of between five and six years, after which there is no apparent increase.

1128

(Commercial name) Cinchona carthagena

This has been successfully introduced into the Nilgiri hills within the past few years, and Mr. Lawson alludes to it in his reports. In 1831-82 he says that up to date "the propagation of this valuable Cinchona was carried on with most satisfactory results" Again, in 1882-83, the plants "continue to make a very satisfactory growth

1120

C. officinalis, Hook.

LOXA OR CROWN BARK; the Pale Bark of Commerce

Syn .- C CONDAMINES, Humb.

References - Year Book of Pharm , 1873, 447 , 1875, 161 , 1878, 444 r -damend Don

MEDICINE. II30 TIMBER, 1131

of C. Calisava. **

Lova or Crown bark from South America; India, Ceylon, and Jamaica being the chief sources of the bark in commerce.

Red Bark of Commerce

CINCHONA succirubra.

1132

to I per cent. s per cent. honidine and

LINCHONING

Cinchena succirubra, Paron

RED BARK

References - Fear Book of Pharm, 1873 70-73 447, 1874 19-20

150-154, 1875, 12, 159, hem Report, 1877, 28 Habitat -Cultivated on the Nilgiris and other hills of South India, at the plantations of Rangbi and Poomong in Sikkim, on the hills east of Toungoo, in Burma, and in parts of the Satpura Range in Central

Mr Lawson writes of South India, while speaking of C. officinalis: "The C succirubra, on the other hand, has a bold sturdy stem, which in nich soil and sheltered situations, grows to the height of sofeet or more The leaves are a bright apple-green in colour, and a plantation made up of this species looks as light and bright, as that of the C officinalis looks and the Climb bend

dark and gloomy "

MEDICINE. Red Bark. 1133

Medicine - This species thrives at a lower elevation than the others, but is comparatively poor in quinine, though rich in cinchonine and cinchonidine It yields its best bark when eight years old. From it is cinchondine. It yields its dest dark when eight years our aroun its chiefly derived the "Cinchonal Februlges," which is now largely manufactured at the Government Plantation of Rangbl Mr W Elborne remarks (Pharm Soc Jour) "The experiments of Mr J E Howard and others have proved that the bark of the root contains a larger proportion of alkaloids than that of the stem, and that the proportion of alkaloid diminishes upwards to the branches" Mr David Howard has also shewn that the nature of the alkaloid yaries according to the part of the tree from which the bark has been taken

In the opinion of pharmacists the bark most suitable for medicinal use is the Cinchona succirabra The cause of this preference, as pointed out by Mr Holmes, are the following (1) the red bark supply will pro bably be always equal to the demand on account of its growing on a much

| , | |
|------------------------|--|
| CINCHONA succirubra | |
| MEDICINE. | ing matter. The brick-red colouring matter is not found in the growing plant but in the dried bark, and Mr. J. E. Howard considers that it is |
| | • |
| Timber. 1134 | ations. They are now implicated with revin which appears to have also become evidised so as to act the part of an acid, and is with difficulty separated. But the most remarkable feature is the altered condution of the alkaloids themselves. Quinne, which formed a considerable portion of the whole, is now diminished, while cinchonine and cinchoniding remain much the same. The quill red bark of Indian plantations is a much better drug, some of it vielding 5 to 10 per cent, of alkaloids, less than a third of which is quinne and a fourth cinchonidine, the remainder being cinchonie and sometimes traces of quinnique. (Elborne) Structure of the Wood—Yellow, moderately hard. Pores small in radial lines; medullary rays, closely packed, fine and very fine. |
| HYBRIDS. | HYBRIDS OF CINCHONA. Kuntze, after examining the living Cinchonas in the Indian planta- |
| | manifest a greater tendency to variation and hybridization than du the plants referred to the genus Cinchons. Mr. J. Broughton, in a report |
| Angustifolia. 1136 | that this ready hybridism between the species of Cinchona affords an explanation of the occurrent |
| Eonplandiana II37 | |
| | |

Chemical peculiarities of the Cinchonas

CINCHONA

guish it from the numerous self sown hybrids that are constantly appearing in the plantations. Of this form Mr. O.B. Clarke wrote in 1871, that the gardener took it for C. pitayensis. Mr. McIver thought it was C. unta

variety

by hybridization or otherwise so as to produce a plant that will give the

maximum of quinine or other alkaloid desired to be obtained

CHEMICAL PECULIARITIES OF THE CINCHONA PLANTS

We may conclude this account of the forms of Cinchona grown in India by displaying the r chemical peculiarities in the following table of comparative analysis taken from Mr. Lawson s report—

The Analyses of the differe it kinds of birks grown on the Government estates given below have been made during the past year by Mr Hooper, the Government Quinologist

CHEMICAL PECULIARI-TIES 1138

| | Qu n ne | C nchon dine | Qundne | Спсћоп пе | Amorphous al kalo ds, | Total | Sulph qu mae |
|--|--|---|----------------------------------|---|---|--|--|
| C officinalis materal monard renewed C. angustickla, natural mosted control of the control of th | 2 77 3 49 4 21 3 97 5 59 1 91 1 69 1 38 1 24 2 24 1 92 4 40 1 64 tr | 1 57 1 50 85 1 3 1 41 2 93 2 11 2 08 3 16 2 08 3 16 2 57 2 45 2 32 73 | 16 20 22 12 33 38 | 39 45 65 12 04 19 1 14 1 68 1 25 1 59 1 436 2 158 77 1 19 2 116 2 13 1 93 | 50 62 70 87 14 88 97 1 16 1 16 1 27 1 40 31 35 50 40 1 0 45 29 48 | 5 39 6 63 6 40 8 351 6 64 6 328 6 41 5 19 7 6 24 6 328 6 41 5 19 7 6 20 9 10 2 3 4 50 5 3 7 3 | 3 72 4 57 5 66 5 34 7 53 6 60 2 57 2 27 1 85 1 66 3 99 2 59 2 59 2 2 59 2 2 20 |

| 302 | Dictionary of the Economic | | | | | | |
|-------------------------|--|--|--|--|--|--|--|
| CINCHONA succirubra. | Hybrids of Cinchona. | | | | | | |
| MEDICINE. | The same of the sa | | | | | | |
| TIMBER, | bark acquires its colour, the enchotannic acid in which it abounds having become oxidised and changed into enchona red, and under these conditions the alkaloids also appear to undergo some corresponding alterations. They are now implicated with resin which appears to have also become oxidised so as to act the part of an acid, and is with difficulty separated. But the most act the part of an acid, and is with difficulty separated. But the most act the part of an acid, and is with difficulty remain much the whole remain much the whole remain much the much better drift than a third of being cinchonin. Structure of the Wood—Yellow, moderately hard. Pores small in radial lines, medullary rays, closely packed, fine and very fine. | | | | | | |
| HYBRIDS. | HYBRIDS OF CINCHONA. | | | | | | |
| 55 | | | | | | | |
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| ł | · : ; | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1 | | | | | | | |
| Angustifolia. | ··· | | | | | | |
| 1136 | allied to the form Bouplandiana. From the fact that it is reproduced by | | | | | | |
| Bonplandiana 1137 | anied to the form boundarian. From the fact that it is reproduced by | | | | | | |
|] | | | | | | | |
| | | | | | | | |
| • | | | | | | | |
| 1 | C. 1137 | | | | | | |

Chemical peculiarities of the Cinchonas

CINCHONA

sively cultivated Dr King, in his report for 1874, says 'The analysis of the bark' of this hybrid or species' shows it to contain much quinine Since the discovery of this fact, every effort has been made to propagate this

Polone Pintt

by hybridization or otherwise, so as to produce a plant that will give the

maximum of quinine or other alkaloid desired to be obtained

CHEMICAL PECULIARITIES OF THE CINCHONS PLANES

We may conclude this account of the forms of Cinchona grown in India by displaying their chemical peculiarities in the following table of comparative analysis taken from Mr. Lawson's report.

The Analyses of the differe it kinds of birks grown on the Government estates given below have been made during the past year by Mr Hooper, the Government Quinologist

CHEMICAL PECULIARI-TIES 1138

101

| | Qu n ne | C nchan d ae | Qundne | C nchon ne | Amorphous al kalo ds | Total | Sulph գսո ne |
|--|--|--|----------------------------------|--|--|--|---|
| C officinals natural motioned renewed C angustifolia natural mosed of motioned renewed C angustifolia natural mosed of motioned renewed and motioned renewed motioned renewed and motioned renewed and motioned renewed and renewed renewe | 2 77 3 40 4 21 3 97 5 60 4 91 1 91 1 69 1 84 1 35 1 24 1 23 1 1 23 1 4 40 1 64 tr | 1 57 1 50 85 1 32 1 41 89 2 11 2 03 1 48 2 8 7 116 2 08 3 16 2 08 3 16 2 77 2 45 2 73 | 16 20 22 12 33 38 | 39 45 65 12 19 1 14 1 68 1 25 1 59 1 436 1 58 77 71 1 17 1 19 2 160 2 13 1 93 | 50 62 70 87 97 1 14 83 97 1 16 1 27 1 43 31 35 50 40 1 07 | 5 39 6 63 6 40 7 51 6 63 7 51 6 38 7 51 6 38 6 41 5 52 6 41 5 52 6 42 2 32 2 32 2 32 3 73 | 3 72 4 577 5 66 5 34 7 53 6 60 2 57 2 27 2 47 1 66 3 09 2 58 5 92 2 20 |

CINCHONA

Chemical Peculiarities of the Cinchonas

CHEMISTRY

Analyses of different kind of barl's grown on Government estates, &c .- contd.

| | Quinine | Cinchonidine | Quinidine | Cinchonine | Amorphous al kaloids | Total | Sulph quinine |
|---|--|--|--|--|--|--|--|
| 22 C. Calesaya tar Anglica, natural 24 C. Ledgeriana, natural 25 C. javamen natural 26 C. javamen natural 27 C. proposed 28 C. proposed 29 C. proposed 30 C. proposed 31 c. notical 31 c. notical 32 C. proposed 33 C. proposed 34 Pahudiana natural 35 renewed | 81 tr 5 49 2 21 2 24 1 28 2 34 3 81 2 50 1 42 04 51 | 83 tr 1 33 49 1 55 64 56 95 52 2 45 10 1 19 | 29 23 1 32 1 43 tr 1 10 63 78 | 1 49 2 04 82 1 07 2 64 1 49 43 1 93 1 93 2 33 2 33 2 33 2 39 28 | 44 36 88 50 48 45 45 90 1 07 39 37 55 67 43 87 | 3 97 2 65 8 52 4 27 4 44 3 37 5 18 3 43 6 32 7 66 5 99 96 2 8 ₅ | 7 38 2 97 3 01 1 72 3 14 5 12 3 36 1 91 05 68 |

Dr King furnishes the following analysis of the yellow and hybrid barks of Bengal -

"The Sikkim plantations produce red and yellow barks Of the yellow barks the following four analyses may be taken as characteristic —

Yellow Bark-(Sikkim).

"But besides red and yellow bark the Sikkim plantations now produce r large quantity of hybrid bark, the composition of which may be seen from the following analysis of four samples —

Hybrid Barks-(Sikkim)

CLIMATE, SITUATION, AND SOIL SUITABLE FOR CINCHONA

Cultivation

CULTIVA-

in Bengal

Climate, &c , suitable for Cinchona Cultivation

CINCHONA.

n Ski m sho a minimum temperature of 40° and renheir, the mean minima for mean maxima 717° and 72 28° 65° and 64 80°, respectively fairly suitable for succurbra,

but rather cold for Callsaya. A plote congenial climate for both species is indicated by the figures obtained at a lower station (elevation above the sea 2,556 feet) which, for the years 1866 and 1807, are as follow.

"In various parts of Ceylon a favourable climate for Cinchons is obtained, as will be seen from the following extract from a most reliable local publication."

publication —

and Cinchona without being injurious to human health. Dismissing the n the shade of 73.2 heit, resulting, 3.8 we

65 8° Fabrenheit

Cinchonas were at first rather m sanderstood, their preference for incessant rain and mist

weather affects the plants in flag In Sikkim, succirabra

makes its most vigorous growth during the latter half of the rains, but both on the Nilgins and Himálayas the trees continue to grow for two months after the rains cease

"Observations which have been made show that (calculated on the teturns of five years) there are at Ootacamund no fewer than 218 dry days in the year and at Neddiwattum about 220 dry days. The rainfall of the former locality (on an average of three years) is about 44 inches per

11414

[&]quot;As regards elevation above the sea, it is found that in the Nilgins succernbra succeeds best at allurdes of from 4,500 to 6,000 feet. An elevation of 7,000 feet is found to be too high, the growth being too slow to be profitable. Pale or crown barks thrive in a zone above this, and seem

CINCHONA.

Treatment of the Demoral Dest-

COLLECTION stems that had been operated upon with a coating of moss or straw in · rocess were very satisfactory

so discovered that, provided to coat the partially decortis ens. Director of the Dutch

plantations in Taya, suggested a modification of this process which consists In shaving off the superficial layers of back from the whole surface of the stem, care being taken that at no point shall the young wood be laid bare. Mr. Moens found that the bark of trees thus treated gradually acquires its former thickness, and that the renewed bark is richer in alkaloids than the original bark. This process has been successful in (King).

not resorted to he bark under if ants" (Resn.

In Madras 1143

letail (than in a the Govern-

ment plantations is that known under the name or stopping. The barker, with the sharpened point of an ordinary pruning knife, makes several cuts running down the stem parallel to each other, about an inch apart. and then with the blunt back of his knife, he raises every alternate narrow

away. If, on the other hand, the layer of cambium cells is crushed or scratched off by clumsy workmanship, no new bark will be formed. In order to facilitate this new formation of bark the stem is covered with

the latter case it is either up-rooted and a young plant put in its place, or it is cut down and one or more shoots are allowed to spring up from its stool.

TREATMENT

TREATMENT OF THE REMOVED BARK.

Bengat. 1144

In Bengal -" After removal from the trees, Canchona bark has to be carefully dried, and on the best modes of doing this careful experiments have been made. I rom these it has been found that exposure to a high

Diseases of Cinchona Trees.

CINCHONA.

temperature, especially in a moist atmosphere, causes bark to become

mouldy and to ferment, as is apt to happen if it be taken off during wet weather, deteroration more or less serious surely occurs. Dry bark, on the other hand, will keep unchanged for many months. Mr. Broughton calculates that trunk bark loses from 70 to 74,8 per cent of weight 16 per cent. The Sikkim experience se 71 per cent, and twy bark 75

In Indras. II45

in Maaras — After the bark is removed from the trees it is dried by the sun or by artificial heat. It is then packed in gunny bags, forming for sale, and

ir. Broughton
exposing the
idence of this,
of the fact, so
ears, however,

DISPASES OF THE CINCHONA TREES

DISEASES.

"Cinchona trees are liable to a kind of canker, which often destroys the terminal and lateral branches, and not unfrequently kills the plants outright. This canker is most abundant in situations where the subsoil is

310

CINCHONA.

Diseases of Cinchons Trees

DISTACTS

ly fatal, the other local and by no means fatal. The former disease is confined entirely to trees which have been originally planted in damp situations or in situations which have become damp subsequently by the oze ing of drainage water in the way already explained. Disease first situacks the roots of such trees. Its existence becomes apparent by the discolorization of their leaves, which ultimately fall off. Gradual shrivelling of the

occasionally these appearances extend to the wood, but as a rule they do not In size the patches vary, many are about the size of a shilling others are much larger. They are not numerous on one tree and are often confined to a single branch. When small no apparent affection of the general

propared wit any recry as to its cause. This disease is not confined like the last to certain spots, but is found on plants in all parts of the plantation.

plantation
A careful examination of all that has been written and of the evito the con-

Mr McIver
professional
cause the damp so I to

he late Mr Scott in his a probable cause of the the atmosphere checking

t that

It may be concluded that, with care in the select on of s tes and the more perfect system of cultivation now pursued all danger from disease has been practically removed

Government Cinchona Febrifuge and Quinine

CINCHONA.

ANNUAL VIELD OF BARK.

In Bengal — The outturn of bark from the Government plantation was, in 1885 86, 339 201h, bringing the total yield of bark up to 3 256 027h Almas the balance the large arms of bar bare.

YIELD. Bengal. IIA7

the manufactu which, during (for the effect paragraphs of

Madras

1148

RESPECTIVE VALUE OF THE ALKALOIDS

"As has been already explained, the medicinal cystallizable alkaloids contained in the bark are quin ne, cinchondine, qui ndine, and cincho into together with an amorphous alkaloid. A fifth called ariene is occasionally found, but has never been used in medicine. M. Hesse has also recently amounced the existence of another alkaloid occurring only in the succurabra bark grown in Sikkim. This base has received the name of

VALUE OF ALKALOIDS

always been much esteemed and of late years (since it began to get scarce) has brought a price as high or even higher than that got for the barks richer in quinnie "(King)

FEBRIFUGE IIAO

GOVERNMENT CINCHONA FEBRIFUGE AND QUININE

"It had for many years been suspected that the other alkaloids in which red bark is so rich are nearly, if not quite, as efficacious febrifuges as quinnie. The settlement of this point naturally demanded attention at an early stage of the Cinchona experiment. In order to settle it by actual rinal, Commissions of medical officers of Government were appointed, and the result of an extended series of trials instituted by them may be given in the following estrates from their reports.—

"In regard to the relative effects of the three new alkaloids, and with then chemically pure sulphate of quinne, the evidence derived from their use shows that with the evception of sulphate of cinchonine, as

or newscrients edan tentinensi

CINCHONA.

Government Cinchona Februinge and Onluine.

PERRIFUGE.

power, and in equal circumstances their use produced almost the same

physiological results.

f quinine, and at sulphate of ulphate of cin-

dphate of crecuonine, though considerably interior to the other alkaloids, 19, notwithstanding, a valuable remedial agent in fever.

"There is no longer room to doubt that the alkaloids are capable of being generally used with the best effects in India. They have been compared with quinine, a drug which possesses, more than any other that can be named, the confidence of medical practitioners here; and have been

other d by

the quinine-maker as good American yellow. The establishment of the therapeutic excellence of these alkaloids largely increased the value of the red bark plantations in India, and made much easier of solution the problem of supplying its fever-stricken population with a cheap and effectual februfuge And for the solution of this problem the Government very speedily took active steps, by appointing Mr. J. Broughton, a skilled chemist educated in England, as Quinologist to the Nilgiri plant-ations Mr. Broughton, after making some valuable observations on the chemistry of hving Cinchonas and initiating a process for extracting the whole of the alkaloids from succerubra bark, retired from the service of Government about 1877 The manufacture of Mr. Broughton's amorphous quining was, however, discontinued on the departure of Mr. Broughton, and since then the whole of the bark produced on the Nilgen plantations has been disposed of by sale. In 1873, Mr. C. H. Wood was appointed Quinologist to the Government plantation in Sikkim, and by him a process of manufacture was indicated by which the mixed alkaloids of red bark are extracted in the form of an amorphous white powder. This powder is called Cinchona Ferriruse, and up to the 31st March 1885, 70,4910 of this drug had been manufactured at the Sikkim plantation. This drug is disposed of only in India, and is

Government Cinchona Febrifuge and Quinine.

CINCHONA

(but not powdered) and is put into wooden casks, where it is macerated in the fold with very dilute hydrochloric acid. The liquor is then run off into wooden vessels and mixed with an excess of a strong solution of caustic soda, a precipitate forms, which is collected on calico filters, and well wash-

FEBRIFUGE.

hours the liquor is carefully filtered. The filtrate is mixed with caustic soda, and the resulting precipitate collected on calico and washed with a small quantity of water, dread and powdered it is then ready for issue, and is sent out under the name of Cincinous perspring."

QUININE.

quante in tellow bark can be extracted in a form undistinguishable, either chemically or physically, from the best brands of European manifacture. This can be done so cheaply that, as long as the supply of bark is kept up, quinne need never cost Government much above twenty-five rupees per pound. It is true that, at the present moment, quinne is obtainable in the open market at rates not very different from this; but that is due to entirely exceptional causes. For some time back the Ceylon planters have been up-rooting their Cinchona trees, both to save them from disease, and to make way for tea-planting which appears now to be becoming the principal industry of that Colony; and Cinchons

Method of extraction of the alkaloids from Canchona bark by cold oil as used at the Government Canchona Factory in Saksim.

"In order that the oil may speed the saks of the oil of the saks of the oil of the oi

is driven at the speed of about thirty revolutions to the minute. Any

CINCHONA

Government Cinchona Febrifuge and Oumine

OHININE

(about 5 parts) may be used in addition to the 8 parts of caustic soda; or caustic soda may be altogether omitted, and 15 parts of slaRed lime may be used instead of it. The caustic soda is dissolved in the water and mixed with the bark. Then the oil is added, and the whole is kept them with the control of the caustic source of

agitator, and is there thoroughly intermixed with acidulated water for

allowed to cool, and as it cools the crystals form out. These crystals are

crystalline mass obtained by filtration is then placed in small lumps on sheets of the blad and appear the ched on clabs of places of Pars

has diamed on, the precipitate is washed with a fifthe plant water, a contained powdered. The powder is Cinchona Febrifuge ready for use."

TRADE IN CINCHONA PRESENT CONDITION OF THE BARK TRADE -Dr King has kindly furnished the following paragraph on this subject -"The present condition C. 1151

TRADE. 1151

Foreign Trade in Cinchons.

CINCHONA.

of the Cunchona bark trade is one of depress on This is by no means due to any diminution of the demand for the Cinchona alkaloids, but in a great measure to the fact that an entirely new source of quinnie has of late been discovered in the northern parts of South America. This

TRADE.

1152

years been poured into the London market in enormous quantities under the designation of Cupren bark. The depression is also greatly due to the enormous exports from Ceylon where enchona is everyn here being up-rooted to make way for Tea. The effect of these flushings has been temporarily to snamp the market, the Cupren crushing out the more costly Cinchona barks. The Cinchona planter, however, has only (if he can afford it) to play a waiting game for, if the importation of Cupren bark goes on much longer at the present rate, Remipa trees will soon become scarce in all easily accessible spots, and the exports from Ceylon must soon dimunsh. With the extension of civilization, and with the steady increase, at any rate, as long as malarious frees' continue to exist in these countries.

Remija plants have only recently been introduced into India. Plants are being grown in the Sikkim plantations, and Mr Lawson alludes to those in the Nilgiri plantations as too young to advance any opinions regarding the success of this new undertaking It seems probable, however, that it may be found possible to cuttivate the Cuprea-bark plant in regions where labour may be less expensive than is the case with the Cinchona plantations. Remija purdicana and R pedanculata yield the Cuprea bark of commerce.

In the official correspondence regarding Cinchona, various opinions

plantations are not too numerous for profit." It must, however, be ad-

can son more t meetin, bark h

INDIAN FOREIGN TRADE IN CINCHONA AND QUIMINE

The in the London market sumed a cite bark assumed a cite of the Dark assumed a cite of the Internet of the In

imports of quitine in 1835-76 was R1.91.619, but it would seem that the removal of the import duty in August 1875 has stimulated the imports which, in the nine months of the current year, are valued at R2.28.978 It is manifest that as yet, even with the aid given by Government in the

CINNABAR.

316

Foreign Trade in Cinchona Cinnabar.

shape of imported quinine and the alkaloids of Cinchona produced in India at the cost of the State, this valuable febrifuge can reach only a fraction of the population

are greater than at any previous Sear The exports of Indian Cinchona bark have steadily increased for years past In 183-83 they amounted to 64,608lb valued at R7,90,801, and last year 1,280 900lb valued at R4,50 381 Thus, both in quantity and value the exports are double what they were five years ago. These facts would seem to almost point

> bled, 2-83, the the nona idia, time

hoped, and indeed it has been somewhat a disappointment to those who invested in the business with expectations of large fortunes in the no distant future. The fall in prices and the competition of other countries have restricted the trade, but though its dimensions are still relatively

small, the trade has been increasing".

In addition to the imports of quinine as a commercial article, reference

plantations the immense benefit conferred on the people of India by the Government effort to provide the only trustworthy specific against the

results of the Nilgiri plantations since their commencement shows a net surplus of profit of R5 51.743 (£55.174)"

CINNABAR.

1153

· 13, C . . 1-0 - ha erana lar ne Slutt rolesi pro-

See Mercury.

| | AMOMU iners |
|---|--------------------------|
| CINNAMOMUM, Blume, Gen Pl, 111, 155 | |
| Cinnamomum Camphora, Nees, Fl Br Ind, V, 134, Wight, Ic, 1818, Laurinese | 1154 |
| JAPAN CAMPHOR of Commerce is obtained from this tree | 1 |
| Syn — Camphora officinarum, Nees, Laurus camphorifera, Kamp; Roxb, Fl Ind, Ed CBC, 340 | } |
| Habitat —A tall tree, with smooth, shining leaves, a native of China, Japan, and Malay Islands, introduced into the Botanic Garden at Calcutta in 1802. This is one of the sources of camphor. For further information see Camphor. | |
| C. glanduliferum, Meissn , Fl Br Ind , V , 135, | 1155 |
| THE NEPAL CAMPHOR WOOD, THE NEPAL SASSAFRAS | ļ |
| Syn -LAURUS GLANDULISERA, Wall, in Act Ser, Med and Phys, Cal, | |
| Vern — Valligiri marisgiri, Nepal, Rohu, Lepcha, Gunserai, Mechi, Ass., Gundroi, Cachar | { |
| References -Brandis, For Fl , 376, Gamble, Man Timb , 306, Voigt, Hort Sib Cal , 308, Pharm Ind , 196 | |
| Habitat —A large tree of South Himálaya from Kumaon eastwards to Assam, the Khasia Hills, and Sylhet | 1 |
| Medicine — In the mended as worthy of | nedicine |
| • | TIMBER 1157 |
| all antiological of the cartied Assam 1 other | } |
| C, iners, Ranw, Fl Br Ind, V, 130, Wight, Ic, t 130, 122, 135 | 1158 |
| | |
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| Unblock A trop of P can D and C binds a dip | |
| | |
| | |
| cinnamonic odour and taste, and by careful drying and preparation appears capable of affording eissia lignea of good quality Dr. Æ. Ross | MEDICINE Bark 1159 |

| 318 | Dictionary of the Economic |
|-----------------------------------|---|
| CINNAMO Partheno | |
| MEDICINE. Branches. IIÓO | states that this tree is very abundant in the Balaghat jungles of North Kanara, and that it was from this locality that the cassia bark, once so largely exported from that district, was obtained. The smaller bancen's when carefully prepared, he pronounces to be nearly equal to that of C zeylanicum. At his recommendation, Dr. Ross states, the Bombay Government now farms out these trees, and by this means a very consi- |
| Seeds IIÓI FOOD. Bark. | derable addition has been made to the revenue. It may be used as a substitute for connamon, to which, adds Dr Ross, it can hardly be reckoned inferior" (Pharm Ind.) "The sprps, brused and mixed with hopes of the spread of the |
| II62 Leaves. II63 TIMBER | (Lisboa) See Structure of the Wood.—Billets of this tree are often sold, together with other kinds of firewood, by the wood cutters |
| 1164 1165 | Cınnamomum obtusifolium, Nees, Fl Br Ind., V., 128; Wight, Ie, t 139 |
| | Syn.—Lurus obtusfolia, Roed, Fl Ind, Ed CBC, 339, L Cassit, in Herb Han. Vetn.—Teapat, ramtespat, kinton Beng, Bara singoli, Nepal, Nupsor, Levena, Patchanda, Ass., Dupatii, Neomi, Krovan, Maon, Lu leng- |
| | kyaw, Burm References — Brands, For Fl. 375, Kurs, For Fl. Burm, II, 287; Gamble, Man Timb, 305, Voset, Hort Sub Cal. 307, Fluck & Hanb, Pharmacog, 528, Balfour, Cyclob, Summonds, Trop. Agrs, 490; Kew Cat, 110 |
| | Habitat.—An evergreen tree, with grey aromatic bark, quarter inch |

Habitat.—An evergreen tree, with grey aromatic bark, quarter inch thick, native of the outer North-East Himalaya, ascending to 7,000 feet, and of Eastern Bengal, Burma, and the Andaman Islands, Fibre.—The "Muea" silkworm (Antherea assame) sometimes feeds

on its leaves

Medicine — Dr Kurz says the aroma of the BARK is variable, and the bark of the root of the Martaban plant is as aromatic as the best Ceylon cinnamon Dr Gimlette says the bark is "collected in Dunabaisia, a

valley adjacent to that of Nepal proper, it is used in dyspepsia and liver diseases?"

Food — Leaves are aromatic, used in curry. In Assam the dried leaves are used as a spice

Structure of the Wood,—Reddish grey, moderately hard, shining, mottled on a vertical section by the medullary rays, the pores containing a gummy substance which exudes copiously on the wood being wetted Weight, 41h per cubic foot arous purposes

Balfour says that the wood is useful for various purposes

C. Parthenoxylon, Meistn , Fl Br Ind , V., 135 , Wight, Ic ,t. 1832.

The Mariaban Camphor Wood

Habitat —A native of South Tenasserim, to Penang and Sumatra, Java and China
Medicine —The FRUIT yields an OIL used in rheumatic affections. An

infusion of the root is also employed as a substitute for sassafras C. 1172

MEDICINE, Fruit 1171 Oil, 1172

FIBRE 1166

MEDICINE

Bark 1167

FOOD.

T168

TIMBER IIÓQ

1170

| | NAMOMU amala, |
|---|------------------------|
| Cinnamomum pauciflorum, Nees, Fl Br Ind, V, 129 Syn — Laurus recurvata, Roxb, Fl Ind, Ed CBC, 338 Ven — Dinglatterdob, Khasia | 1173 |
| References - Gamble, Man Timb 305, Fluck & Hanb, Pharmacog, 528, Simmonds, Trop Agri, 490 | Bark |
| Habitat -Met with in the Assam Valley, Khasia Hills, and Sylhet | Leaves. |
| P. | TIMBER 1176 |
| per cubic foot C. sp. Vern — Hmanthin, Burn | 1177 |
| Reference—Gamble Man Timb, 307 Habitat—Met with in South Tenasserim Structure of the Wood—White, with a pink tinge, shining, moder- | TIMBER |
| ately hard, highly scented Weight 36 to 43th per cubic foot It is plentiful at Tavoy and Mergui, where it is used for building. | 1178 |
| C. sp, perhaps C Parthenoxylon, Meisin (Kurz, II, 289), or Aperula Neessana, Bl (Brandis, 383) Vern — Ka away, Bursi Reference — Gamble, Man Timb, 307 | 1179 |
| Habitat — Met with in South Tenasserim Structure of the Wood — Orange-brown, scented, moderately hard oily to the touch It resembles the wood of G. glandaliferum in structure Weight 43 to 46% per cubic foot, durable, used for house-building and shangles | 1190 |
| C. Sp. (This is probably C. iners, Ranw, which see.) Vern — Sunkay, Burn Reference — Gamble, Man Timb, 307 Habitat — Met with in South Tenasserim; found by the late Mr Lee in Mergu, but rather scarce | 1181 |
| Structure of the Wood—Red, soft strongly scented C. Tamala, Fr. Nees. Fl. Br. Ind., V., 128 THE CASSAL INCOME OF CASSAL CINNAYON. | TIMBER 1182 1183 |
| | |

CINNAMOMUM Tamala.

The Cassia Lignea.

Habitat.-A moderate-sized evergreen tree on the Himálaya, spaningly

DYE Leaves II84

011

1185

Bengal the leaves and bark of C. obtusifolium, Neer, more commonly bear these names. In fact, the leaves of any species of the genus would be at once called Toptat by a native, but for economic purposes C. Tamala is superior to any of the other Indian species. The bark of this plant is the Castia Lighten of Indian commerce. The Castia Cumamon of Euclidean Commerce, The Castia Cumamon of Euclidean Commerce, The Castia Cumamon of Euclidean Commerce, and the Castia Commerce of Castia Chiefly, however, attributed to concern the control of the Castia Cas

Oil.—The outer bark of the plant yields on distillation an essential oil

has a to it

Annamon or Cassia Lignea of Indian commerce is obtained from this plant.

mon or Cassa Lignes of Indian confinere is obtained from this plant.

It is coarser and said in larger pieces than the true ennamon or bark of

C. zeylanicum, for which it is often used as an adulterant, Kurz says
the bark of the root is quite as good as the true cinnamon bark in

Manipur the writer found the natives on the eastern frontier regularly in

but on this point Fluckiger and Hanbury, in their Pharmacographia, say: "Although it is customary to refer it (Cassia bark) without hesitation to a tree named Cinnamonium Cassia, we find no narrant for such reference, no competent observer has visited and described the Cassia.

CASSIA BUDS.

CINNAMOMUM

CASSIA BUDS.

Tamala

of the bark. It appears from a very of writing that the cases were employed in preparing the speed wine called Hipporas (Plasma egg., Treasury of Bottny). Dr. Dymock alludes to "Kila nagkesar (known in Europe as Cassia buds)" as the immature fruits of Cimamo ın Ьy CASSIA BARK 1187 straight, even and regular, and are of a darker brown, and though some of the bark is extremely thin, other pieces are much stouter than fine cinnamon,-in fact it is much less uniform. The outer coat has been removed with less care than that of Ceylon cinnamon, and pieces can easily be found with the corky layer untouched by the knife "Cassia bark breaks with a short fracture The thicker bark cut transversely shows a faint white line in the centre running parallel with the surface Good cassia in taste resembles cinnamon, than which it is not less sweet and aromatic, though it is often described as less fine and delicate in flavour. "An n call ad af an Havour "The less esteemed kinds of cassia bark which of late years has been EDICINE Bark 1188 Leaves. 1180

It appears from a very old writing that the cassia buds

| 322 | Dictionary of the Economic |
|--------------------|--|
| CINNAMOM Tamala | |
| HEDICINE, | spleen, affections of the nerves or heart, pains in the womb, also in retention of urine and catamenia, and bites of serpents and poisoning by opium it and leaves is used as a medical point of the server of the s |
| 5000 | whole ussue assume a dangy brown colour, in the outer layers the starch granules even are coloured. Tannic matter is consequently one of the substance present of cassa or cannam bright blue coloration of cassa or cannam bright blue coloration. We have not ascertained the nature of the substance that thus modifies und becomes permanent that nature of the substance that thus modifies the action of lodine; it can hardly be tannic matter, as we have found the recation to be the same when we used bark that had been previously repeatedly treated with spirit of wine and then several times with boiling either. The mucilage contained in the gumcells of the thinner quills of cassa is easily dissolved by cold water, and may be precipitated to light. |

is much employed to adulterate true cinnamon.

C. 1192

The Cassia Lignea.

CINNAMOMUN Tamala.

Structure of the Wood—Reddish grey, splits and warps, moderately hard, close grained, slightly scented, not used Weight 39 lb per cubic foot

TIMBER. 1193

thing can be gathered as to the incention of its being grown to a profit in Bengal as a source of Cassia bark."

FOREIGN TRADE OF CASSIA LIGNEA

TRADE.

| Year | Impo | RTS | EXPORTS AND RE EXPORTS | | |
|---|--|---|---------------------------|--|--|
| | Quantity | Value | Quantity | Value. | |
| 1830-81 1831-82 1837-83 1833-84 1834-83 | cwt 19,660 9 705 13 240 19 917 14,769 | R 4 63,576 1,90,891 2 61,543 3 84 491 2,48,344 | 5,365 4,692 | 1,18,249 94,408 45 921 1,05,310 81,394 | |

Imports for 1884-85

| Presidency to which imported | Quantity | Value | Country from which imported | Quant ty | Value |
|---------------------------------|-------------------------------|----------|--------------------------------------|-----------------|-------------------------|
| Bombay Bengal Madras | ewt 12 308 2,226 235 | 41.400 | Aden . China-Hong-Long Straits | 13 557 1,212 | R 2,24 So5 23 536 |
| TOTAL | 14,769 | 2,48,344 | TOTAL | 14 759 | 2,48,344 |

Re exports for 1884-85

| Presidency from which exported | Quantity | Value | Country to which exported | Quantity | Value |
|-----------------------------------|-------------------------|--------------------------|--|-----------------------------------|--|
| Bombay Bengal Sudh | cwt 4 675 13 4 | R 8t,114 225 55 | Pers a Arab a Turkey in As a . Other Countries | ent 2,785 980 715 212 | R 48 9.6 17,051 11 956 3 561 |
| TOTAL | 4 692 | 81,394 | TOTAL | 4 602 | 81.204 |

Dr Dymock (Mat. Med. W. Ind., 2nd Ed., 667) alludes to Cassia

of the truly Indian bark is exported

Y 2

| 324 | Dictionary of the Economic | | | | | | |
|---------------------|--|------------------------------------|--|--|--|--|--|
| CINNAMO zeylanic | MUM True Cinnamon. m | True Cinnamon. | | | | | |
| 1196 | Cinnamomum zeylanicum, Breyn.; Fl. Br. Ind., V., 131; Wight, TRUE CINNAMON. [Ic., t. 123. | | | | | | |
| | ל מי לים לים לים ליות אין ניין אין אין אין אין אין אין אין אין אין | - | | | | | |
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| | ET E I AL JUANIM PERC | | | | | | |
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| | | | | | | | |
| | Murray, Drugs and Pl Sind, 110; Biaie, Lat Kaw erou, 1 ari 15, Waring, Basar Med., 43; S Arjun, Bomb. Drugs, 116; | Baden | | | | | |
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| CAMPHOR. | the said from the greet bank | | | | | | |
| 1198 1198 | from Nepal and from the N together with myrobalan, c | iorth- hiefly is of ed to | | | | | |
| 1100 01r | of einnamo | | | | | | |
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| | is at present unknown | ntion | | | | | |
| | , | • | | | | | |
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| | C. 1199 | | | | | | |

True Consmon.

CINNAMOMUM zeylanicum

here and there scars or holes at the points of insertion of leaves or twigs. The niner surface of the bark is of a darker hue. The bark is brittle and splintery, with a fragrant odour peculiar to itself and the allied barks of the same genus its taste is saccharine, pungent, and aromatic. (Pharmacographia, p. 533)

MEDICINE. Bark 1200

> 011. 1201

carron having the totinuta C_{00} 11, it also contains a sman quantity of benzoic acid. In medicinal properties and uses it resembles closely the oil of cloves (*Pharm Ind*) "Cinnamon is largely used in compound prescriptions. A combination of cinnamon, cardamons, and *tejapate* fee leaves, passes by the name of *trijataka*, these three aronatics being other properties.

Special Opinions — § "Powdered cunamon in 20-grain doses is a reputed medicine in dysentery" (Assistant Surgeon T. N. Ghose, Merruly, "Appears to be useful in certain forms of amenorrhoas when thewed or as 10 Cinnamon!" (Surgeon-Major G. Y. Hunter, Karachi). "The bark ground up with water into a paste is applied to the temples in neuralga and severe headache" (K. N. A. Dacca). "Warm stomach cordial, carmative and astringent, useful in flatulence and diarrheas, Cinnamon oil applied locally in very small quantity gives great rehei in [20, 20]. "The Control of the control

Boiland. It was prepared by Valerius Oordus, who stated, somewhat before 1544, that the oils of ernamon and closes belong to the small number of extential only and are heavest than water, 'undum petunit.' About 1531 the essential oils are heavest man, mace, closes, pepper, nutnegs, and several others, were also distinguished claimitherus of Anderrach, and again, about the year 1560, by Ports.

and several country were used training by commerce of extending unagain, about the year 1550, by Ports.

"In the latter part of the last century it used to be trought to Europe by the Dutch. During the five years from 1775 to 1779 inclusive, the average quantity annually disposed of at the sales of the Dutch East India Company was 176 ounces. The wholesile price in London between

CINNAMOMUM zeylanıcum

True Cinnamon

CHEMISTRY

not examined ed with res n

> and tannic Wittstein to decoction of

afforded to Schatzlar (1862) 5 per cent of ash cons sting chiefly of the

recogn tion but if it should have been reduced to powder, the case is widely different. We have found the following tests of some service when the spo ce to be examined is in powder. Make a decoction of powdered rinnamon of kno of the suspected powder.

each with one or two drops of

mon is but little affected but in that of cassia a deep blue black it is

ell as ed by

- 1

FOOD Bark

1203

TRADE

nfectionery, also in curry, and enters into the preparation known as pán Foreign Trade of Cinnamon

EXPORTS AND IMPORTS RE EXPORTS Year Quant ty Value Quant ty Value R Ib Ŧ ħ 879 So 1880-81 1 785 484 202 3 511 7 707 10 432 4 833 881-82 512 3 641 14 436 2 244 67 466 1882-83 1883-84 18 731 13 687 27 768 35 181 11 068 2 640 9 330

Detail of Imports 1883 84

| Prov nce into which imported | Quant ty | Value | Country whence imported | Quant ty | Value |
|-----------------------------------|-----------------|-------------------------|---------------------------------------|-----------------------|-------------------|
| Bengal Madras Brit sh Burma | % 12 547 224 | R 437 2 143 60 | Stra ts Settlements Other Countres | 15 11 924 1 763 | R 2 034 606 |
| TOTAL | 13 687 | 2 540 | TOTAL | 13 687 | 2 640 |

| | | | | | AMPEL areira | |
|-------------------------------------|------------------------------|--|--|---|---------------------|-------|
| Detul of Exports, 1883-84 | | | | | | TRADE |
| Province from wlich exported | Quantity | Value | Country to which exported | Quantity | Value | |
| Bengal Bombay Madras | fb 4 032 715 30 434 | R 860 122 8 348 | United Kingdom Mauritius Other Countries | 30 334 3,472 1,375 | 8 328 690 312 | |
| TOTAL | 35,181 | 9 330 | TOTAL | 35,181 | 9,330 | |
| Cissampelos I False I Syn — C | Pareira, P | <i>Linn', F</i> Brava Difolia, W | nn, Gen Pl, I, I Br Ind, I, 103, Vall, Cat, 49, 79, pa | , Menispe rtly, Roxb tik pat elpa | - 1 | 1205 |

Habitat—A lofty climber common both to the Old and New Worlds In India it is met with in the tropical and subtropical provinces from S and and the Panjáb to Ceylon and Singapore, ascending in the hotter valleys of the Himálaya to about 5 000 feet Common below Simla at that altitude I tirrinshes the Redaix Pareire, or False Pareira Brava of drug-

References -Brandis, For Fl, 10 571 Gamble, Man Timb, 11,

MEDICINE Root 1206

inch to four inches in diameter, and from four inches to four feet in length Bark greyish brown, longitudinally wrinkled, crossed transversely by annular elevation, intenor woody, yellowish grey, porous, with nel-

well marked central column composed of wedges diverging from a common axis, round which are arranged a few concentric rings intersected by

CINNAMOMUM zevlanicum

True Cinnamon.

CHEMISTRY.

not examined ed with resin

. and tannic Wittstein to

decoction of Cinnamon

afforded to Schatzlar (1862) 5 per cent, of ash consisting chiefly of the

hia remark that "Cassia very commonly substire is no difficulty in its I to nowder, the case is

widely different we have found the ton wing tests of some service when the spice to be examined is in powder. Make a decoction of powdered crimamon of known genuineness, and one of similar strength of the suspected powder When cool and strained, test a fluid ounce of each with one or two drops of tincture of iodine A decoction of cinnamon is but little affected, but in that of cassia a deep blue black tint is

FOOD Bark 1203 TRADE 1204

tionery, also in curry, and enters into the preparation known as pan-

FORFIGN TRADE OF CINNAMON

| Year | IMI | ORTS | Exports and Re exports | | | |
|--|--|---------------------------------------|---|---|--|--|
| | Quantity | Value | Quantity | Value | | |
| 879 So 1850 St 1881 S. 1882 S. 1883-S4 | 1785 7,707 2,244 18,731 13,687 | #84 3 511 512 3,641 2 640 | 15 202 19 432 67,466 27,768 35 181 | R 4 833 14 436 11,668 9 339 | | |

Detail of Imports, 1883 84

| Province into which imported | Quant ty | Value | Country whence imported | Quantity | Value |
|-----------------------------------|----------------------------|-------------------------|--|-----------------------|--------------|
| Bengal Madras British Burma | 15 916 12 547 224 | R 437 2,143 60 | Straits Settlements Other Countries | 75 11 924 1,763 | 2 034 600 |
| TOTAL | 13 687 | 2,640 | TOTAL | 13,687 | 2 640 |

False Pareira Brava.

CISSAMPELOS Pareira

TRADE

1205

Detail of Exhapts, 1882-84

| | | | <u> </u> | | | |
|---------------------------------|------------------------------|--------------------------|---|--------------------------|--------------------------|--|
| Province from which exported | Quantity | Value. | Country to which exported | Quantity | Value | |
| Bengal Bon bay Madras | fh 4 032 715 30,434 | R 860 122 8,348 | United Kingdom . Mauritus . Other Countries | 30,334 3,472 1,375 | R 8 328 690 312 | |
| TOTAL | 35,181 | 9 330 | TOTAL | 35,181 | 9,330 | |

CISSAMPELOS, Linn., Gen Pl , I , 37, 962.

Cissampelos Pareira, Linn, Fl Br Ind, I, 103, Menispermace.e. False Pareira Brava

Syn — C Hernandfolia, Wall, Cat, 49, 79, partly, Roxb, Fl Ind, Ed. C. B. C., 742, Van. 11 - 7, 7, 7, 11

Habitat —A lofty climber, common both to the Old and New Worlds. In India it is met with in the tropical and subtropical provinces from

HEDICINE Root 1206

marked, olten incomplete, concentric rings and medullary rays. Taste at first sweetish and aromatic, alterwards intensely bitter." [Pharm Ind.) In distinguishing the time from the false drug, the following facts have to be borne in mind. "In the root of Chondodendron there is a large well marked central column composed of wedges diverging from a common axis, round which are arranged a few concentric rings intersected by

328

CITRULLUS Colocynthis

False Pareira Brava; Colocynth

MEDICINE.

wedge-shaped rays, which are often irregular, scattered, and indistinct.

The axis is not often eccentric. In Cissampelos Pareira the root and stem are nearly alke in structure, and in transverse section there are concentric rings " (Year-Book of Pharm., 1873, 30)

Foot 1207 Eark 1208 Leaves Medicine—The dried noor and BABK are used as mild tonics and diureties in advanced stages of acute and chronic cystiss and catardal affections of the bladder, also exercises apparently an astringent and sedative action on the mucous membranes of the gentio-urnary organs. They are generally administered in the form of decoction and extract. The leaves are applied to abscess. Alinsile writes: The leaves of this plant are considered by the *vytans* as of a peculiarly cooling quality, but the root is the part the most esteemed, it has an agreeable, bitterish taste, and is considered as a valuable stomachic. It is frequently prescribed in the latter stages of bone) complaints, in conjunction with aromatics. Cissampelos Pareira has been very highly extolled by several writers for its medical virtues, particularly by Sloane, Maregraaf, Barham, and Wright. The first speaks of the efficacy of the leaves as a vulnerary for

Special Opinions.—9. Used rocally in cases of infineating sores and

CHEMISTRY.

T2TT

a yellow bitter principle, a brown colouring matter, starch, an azotised substance, and various salts of ammonia and lime." (O'Shanghnessy).

to Fluckiger,

Cissus carnosa, Lam. see Vitis carnosa, Wall, Ampelinez.

C. discolor, Blume, see V. discolor, Dals.

C. edulis, Dalz., see V. quadrangularis, Wall.

C. pedata, Lamk, see V. pedata, Vahl.

CITRULLUS, Schrad.; Gen. Pl., I, 826.

Citrulius Colocynthis, Schrad; Fl. Br. Ind, II., 620; Wight, Ic, 1 498; CUCURBITACEE.
COLOCYNTH. Enr.

| onucis of India | |
|--|-----------------|
| | TRULL |
| | ulgarıs |
| nt, bitter taste, and contain 17 per cent of fat | |
| t, if rubbed, emit a very unpleasant smell " | |
| limba transporter as rmacy (1873) gives the following account | FOOD Fruit |
| Dix 71. | 1217 |
| Payrametry systems and the state of the stat | |
| more market of man a | |
| falls, khar-burght streed from pulp by roasting khira is, khirit B sacks, and then deprived of Belegeness. | |
| 101 Siewart Ph to | |
| Pharmater 2/5, Brandler Strain about taster out series of the series contain about that the series contain about buminous substances, be- | |
| and Drugs Sind, 39 E | |
| 4 t other ways as food | Kernels 1218 |
| 1 as food for horses cold winter nights | |
| ously been pierced aters, until all the | |
| Habitat —An annual found wild in tral, and South India. It is the wild good the first the people of | DOMEST. |
| The plant cannot be said to be said to the system of the property use for finding, the fruits are collected from plants where the camels desert tracts of North-West India (Plants W.). (207) | brushes 1210 |
| | Tar 1220 |
| the southern provinces for burning in lamps (So burning in lamps) | 1221 |
| BC,700 samanka, | ł |
| ana, Pa ; Turbuj, | 1 |
| actics, enlargements of the abdonountaives erg, unmany 4 see. Ac. An ort prepared from the seeds of Indian Color hand, seed, and the prepared from the seeds of Indian Color hand, seed, and the pression of the breasts." (IV C Dutt, Man 1 Met Hand) According to the breasts." (IV C Dutt, Man 1 Met Hand) According to the pression of th | ļ |
| of the breasts." (U C Dutt, Mat Med Hand) According 1 | 1 |
| | 1 |
| madan whiters, Colocy int is a gratic purgative, tremony, by the parts of the system. They recommend the fruit, least with the parts of the system. They recommend the fruit, least with the parts of the system that continues and its fungation brings of the parts of | 1 |
| flow The author of the Makhsan describes a curous mode that tration "A small hole is made at one end of the fruit and are introduced, the hole is then closed, the fruit enveloped process." especially the hole is then closed, the fruit enveloped process. | |
| nch | ì |
| the ten | 1 |
| · son |] |
| . er- | [|
| C. 1218 | |
| | |

Colocynthis

Colocynth,

Colocynth is rarely employed alone, it is generally given in combination with other purgatives and carminatures. It commonly causes griping when used alone, in excessive doses it produces inflammation of the intestines and even death. The principal efficient forms for the use of this drug are the compound extract of Colocynth, compound Colocynth pill, and Colocynth and henbane pill. (Bentley and Trim, Much. Pl., 124). From the pulp a watery extract is prepared, which is much.

the supply of the medical

stores in Paujau the fluit is extensively employed as a purgative for horses. The pulp of the fresh frut mixed with warm water, or the dired pulp with agreetin, is reckened a special remedy in cholera. The dired root reduced to powder is given as a purgative (Bellew) Stocks says the root and the junce are both used medicinally in Sind. In a report of the drugs shown at the late Colonial and Indian Exhibition from Baroda, the properties of the fruit and root are given in very nearly the same terms as above, so that the knowledge of this drug seems very extensively diffused over India.

Special Opinions - 5 "Used in dropsy and amenorrhæa" (Native

CHEMISTR Y 1216

principle remains partly in the aqueous liquid, partly in the resin from which the Colecyarlin is to be extracted by boiling water. The whole solution was then concentrated and mived with carbonate of potassium, when a thucksh wiscal highud separated. Hubschmann dried it and redissolved it in a mixture of 1 part of strong alcohol and 8 parts of ether After treatment with charcoal, the solvents were distilled and the remaining bitter principle removed by means of water. This on evaporating alforded 2 per cent of the pulp of a yellow, extremely butter powder, readily soluble in water or alcohol, not in pure ether. Colocynthin is precipitated to the remaining bit of the property o

"Again, another method was followed by Walz (1858) He treated alcoholic extract of colocynth with water, and mixed the solution, firstly,

purgative, it is decomposed according to walz, by bonning unute the chloric acid, and then yields colocynthem, $C_0H_{\rm He}O_{12}$ and grape sugar the of control of the control of the control of the control of the with boil

C. 1216

Torded us hey have,

CITRULLUS The Water melon vulgaris even when crushed, but a faint, bitter taste, and contain 17 per cent of fat oil. "The fresh leaves of the plant, if rubbed, emit a very unpleasant smell" (Pharmacog , \$ 296) Food -The Year Book of Pharmacy (1873) gives the following account FOOD of the fruit as a food substance -Fruit "The FRUIT, which is about as large as an orange, contains an extremely 1217 bitter and drastic pulp, from which colocynth is obtained. This pulp is said to be eaten by buffaloes and ostriches, but is quite unfit for human The seed kernels, however, which contain but a very small quantity of bitter principle, are used as food by some of the natives of the African deser and I their A sun The kernels contain about albuminous substances, berefore be regarded as a suffi-'The KFRNELS are heated to boiling, then washed with cold water, dried Kernels. and powdered and eaten with dried dates, or used in other ways as food" 1218 (Bentley and Trimen), "The fruits are often used as food for horses in Sind, cut in pieces, boiled, and exposed to the cold winter nights They are made into preserves with sugar, having previously been pierced all over with knives, and then boiled in six or seven waters, until all the DOMESTIC Toothbrushes. 1210 Tar Citrullus vulgaris, Schrad , Fl Br Ind , II , 621 1220 1221 THE WATER-MELON. Syn -Cucurbita Citruillus, Linn , Roxb , Fl Ind , Ed CB C , 700 Vern — Tarbusa, tarbus, turmus, karbuj, halında, hındwana, samanka, I kas , paye, tha vaith: Burn References -Dala & Gibs , Bomb Fl , 102 , Stemart, Pb

Habitat -Ci It sated

The Water melon.

vulgaris

OIL.

1222 EDICINE

1223

Julce.

1224

FOOD Fruit

Seeds

1226

HISTORY Histore Seringi wards

1'a-m - L 1

an and a of So thorn Italy, while It was after-

saw die

of wild animals eagerly devoured the the ancient Egyptians, as appears fro only received the plant in the tenth c

Orig Cult Pl. 262)

Oil -The seeds yield a clear, bland, pale coloured, limpid oil, used for burning in lamps, and probably also as an edible oil (Cooke)

says t use

and ar remar and a

ministered it with good results

Special Opinion - 6 "Cooling as well as a diuretic" (Assistant Surish yellow or red The SEEDs are compressed and variable in shape and

geon Anund Chunder Mukerji, Noakhally) Food .- The FRUIT is large, ovoid, green, and smooth, the flesh is whit-

colour, they are sometimes dried and the kernels eaten. Stewart says they are eaten parched with other grain In the North-West Provinces such numbers as to form for some months in the year no small part of the

1227

food of the scanty population The seeds of these and of other cucurbitaceous plants cultivated in gardens are ground during times of scarcity into a kind of flour" (Raj Gas 31) The water-melons of the North-Western Provinces are famed all over India and are used as refrigerants, and as a sherbet ingredient. Var fistulosus, Stocks, Duthie & Fuller, Field and Garden Crops,

N-W P, II, 46, Plate XLVII In the Flora of British India C fistulosus has been given as a syn-

onym to C vulgaris, Schrad, but it seems desirable to retain it as a variety. Vern.—Tandás, tendu, tind albinda, tensi, N. W. P., Tinda, albinda,

dilpasand, PB , Meho, trindus, dilpasand, tinda, alvinda, SIND References -Stewart, Pb Pl . of . Balfour, Cyclob.

Habitat - In the North-West Provinces this fruit is sown some little time before the rains, the fruit ripening during the rains " Cultivated in Sind from April to September, generally in the same plot of ground with common melons, gourds, and cucumbers In the North-'s before r vege-

MEDICINE 1228 FOOD Pickle 1230

the size

The Genns Citrus.

CITRUS.

black lt, and anner. ls, and ocks. 111

Hooker's fournas of Dolany, Quoted by Danne und a need !

CITRUS, Linn , Gen. Pl., I., 305.

1231

Rut

This genus comprises 5 tropical Asiatic species and 2 Australian.

The different varieties of the Orange, the Lemon, the Lime, and the Citron have been critically examined by a large number of patient and careful observers, but, it must be admitted, with but indifferent results Brandis, after presenting a concise and pregnant account of the Indian

results regarding the spread and changes of arborescent species under cultivation." Since these words were penned, it is feared we have not advanced very far towards a solution of the problems which lings upon the nativity of the orange and the lemon. Shortly after the appearance of Dr. Brandis Forest Flora, Dr. Rice of New York published in New Remedies a most interesting account of the genus Citrus, but without

C. Aurantium by their very much smaller flowers. It is usual to regard larins, cultitine Khasata inits but f good Mandarins as

Whatha K 's ha sa

but it would be interesting to have the question of its relation to the sweet lime more clearly established. According to Kurz, these two cultivated plants are one and the same species, C. nobilis, being much cultivated all over Burna. This conclusion may not, however, be regarded as satisfactory, from the fact

The true Mandarin,

- subsequently), may be found useful:

 Young shoots and leaves perfectly glabrous; transverse vesicles of the Young shoots and leaves perfectly glabrous;
- † A shrub, young shoots purple; petiole more or less naked, petals generally tinged with red; flowers

The Sweet Orange

CITRUS Aurantium.

often uni exual, stamens 20-40, style long, thick, fruit globose, ovoid or oblong, often mamillate, rind very thick and rough or foot a height no clocks 1f At

low or orange coloured

C. nobilis (and P.C. Limetta)

Note .- If C. Limetta be added as a sycopym of C nobilis the definition of the rind would have to be modified

+++ A

Walnut, Ithu Ulick, yenow

C. Hystrix.

ttt A tree, young shoots whitish, petals more than twice the length of those in the two preceding species, flowers bisexual, stamens 20-30, style long, thick, fruit globose or flattened, pulp sweet, acid or butter

. C. Aurantium,

10 loung shoots and under-surface of the leaves pubescent. transverse vesicles of the pulp distinct . فيالماني الأبانية وا

. C. decumans.

value.

Citrus Aurantium, Linn (in part); Fl Br. Ind , I , 515 , RUTACEE The name Aurantium is not derived from the Latin Aurum "gold," 1232

but comes to us from the Arabic narands. This became narends (narang) in the Persian, and its equivalent in Sanskot is nagaranga, and in Hindustant narangs Names beginning with nar are generally associated with fragrance. The name for the orange first reached Europe through the Moors, and became naranga in Spanish, laranga in Portuguese, wards a

กราสโรก

bitter or orangé

DeCandone, suce wurnen, 861

Var. 1. Aurantium proper (var B dulcis, Linn) (For var 2, see p. 345)

Botanical Diagnosis -Petiole naked or winged, pulp sweet, yellow. very rarely red, rind loose or adhering

THE SWEET ORANGE, CHINA ORANGE, PORTIGAL ORANGE, Eng., ORANGER, Fr., ARANCIO DOLCE, PORTOGALLO. MELARANCIO, II, NARANJO, Sp., LARANJEIRA DE FRICTO DOLCE, Port, APFELSINE, SUSSER POMERANZENBUM. ORANGENBALM, Germ , PORTOGALLO, Gr , LARANIAS, Rue,

C. 1233

Var 1st

Aurantium 1233

CITRUS Aurantium.

The Sweet Orange.

Vern -- Nérangi, sangtara, nérenj, narungi, nérunge, sunthura, amritphal, kumla nebu, HIND.; Kamlá nembu, nérungi, nérengé, BENG;

R.

Pharmacog, 144, U.S. Dispens, 151a 5a, 201; Denii & Irim, Med Pl, 51; U. C. Dutt, Mat. Med. Hind., 127; Dymock, Mat. Med. W. Ind., 107, Annale, Mat. Ind., 1, 251; O'Shaughnessy, Beng. Dis-

1045-7, Plesse, Perjamery, 159, publish, Cyclop, amith, Dic, 300;

Habitat.—Cultivated in most parts of India, but specially so in the

oranges, but there are large tracts where none or inferior kinds only are produced. In India, the fruit generally ripens between December and Match, according to the climate of the locality. A variety which flowers twice a year (February and July), and yields two crops—the first

HISTORY.

rung of the Christian era ** It was, according to some authors, taken to Europe by the Portuguese about 1548, the first tree having stood for some time at Lisbon From this point, the cultivation of the sixed orange spread to Rome and along the Mediterranean DeDandolle, however, so of opinion that the sacet orange may have reached Europe before the

The Sweet Orange.

CITRUS Aurantium

HISTORY.

sweet and the bitter orange were unknown to the Romans. Whether or not the Portuguese deserve the credit of introducing the orange to

that the stall be is a harve or clinia, the names given to the various forms are represented by a particular character which occurs in the most ancient Chinese writings, whereas the names given to the pumelo and the lime are of a much more modern character.

Dr. Bonavia has given the subject of the Indian Oranges, Limes, and Lemons more careful consideration than any other Indian authority. In

derived from the Sanskrit It is, according to the best authors, a Persian corruption, and it can hardly be doubted that Santara is derived from Cntta—a town famous for its fruits. Yule-Bid Author was a beyoning of the fourteenth century we find littled a cutoling, the fruit of little His words, as rendered by M Bennaud, run fruith of little His words, as rendered by M Bennaud, run on the desemble of the more admirables pour la grosseur et la gout. That these pommers admirables pour la grosseur et la gout. That these pommers were the famous Cintra orange hardly be doubt. The third of the more of Zehrerd and Minhamed Baber, Emproy of the contract of the property of the contract o

me of Sangtarah, which is, for a species of the fruit nge in Portugal would ace name Centra, but for the of Portugals has adhered =s might be quoted in supnother fruit . (Taranj), but the skin of page 328 Kirkpatrick, in Nepaul Santela orange as

Nepaul Santola orange as ays, "I take to be a corrup-C 1233

م. ره Dictionary of the Economic

of

| | • • |
|----------------------|---|
| CITRUS Aurantium, | The Sweet Orange. |
| HISTORY. | |
| | the supposed parent of |
| | this belief (held very t the opinions publish ed in Dr Bonavia's paper anuged to doove Referring to the small |
| | ver the North-Vest inge is called Sunfo- utwal orange The Mr. J. H. Fisher, |
| 1 | |
| | that as the was unable to visit the tocatity he there is an upper tangon seeing these wild trees." Both the last mentioned writers appear to allude to sweet oranges, but it would be unsafe to infer, even from the |
| | C . D . r r.s C. C. command the |
| - | |
| CULTIVA- | writers CULTIVATION OF ORANGES IN INDIA—There are two great centres of sweet orange cultivation in India—the Khásia Hills and Silhet on the eastern side and Nagpur in the central tracts of the country. The |
| | |
| | is grawn from Ulwar, Gurgaon, &c The opening up of the new Mager |
| | • |
| | Date of the state |

The Sweet Orange.

CITRUS Aurantium

or economic point of view, it is of little consequence whether, a sweet orange be referable to C Agrantium or C noblis; we may therefore

TION
THE RACES
OF SWEET
ORANGES.

Race ist, Santara. 1234

ber, December, and January.

Vern —T form

Beng , kompho tengo,

tenge, latter in N-W P for the same orange), Sintara, CP, (near Wardha) two crops are obtained, one ripens in spring known as the mirageahar,

Mr. Morris (in his Godavery District, Madras Presidency) says: "a

name with it. The plant could scarcely have been indigenous to both loca.

ora

and The ora ge of a track time, met with in the objectey District, Mr

Race 2nd, Koonia 1235

darker colour, thinner, and adhesive (e.g. jacket not loose). This is the orange that comes latest into the Calcutta market. It is plucked about

CITRUS Aurantium.

The Sweet Orange.

RACES OF SWEET ORANGES Before proceeding to discuss the third class of sweet oranges referred to by Dr. Bonavia it may be as well to refer to another author. Mr. Alkinson says of Kumaon: "The sweet orange is the form most usually cultivated, and there are several local varieties, some named after the localities in which they are produced, and others according to specific

names derived from a common source, and that the oranges they represent should be isolated from those designated Santara or some derivative from doubts may be enter-

ection with any other ames so much alike as emote parts of India

and be used to could be 1 may be four That writer of "The orang petioles at

and with gl late, acumin possible to as

possible to avoid the conviction that too strong opinions have, by all

tioned regarding the vernacular names as given to the various forms of the Indian sweet oranges of cultivation (and even to the supposed wild oranges of Nepal), is sufficient to justify the conclusion that the whole subject is still involved in the utmost obscurity. A scientific eviploration

Rare 3rd, Malta. 1236

> The oranges of Burma, for example, may have been derived from the indigenous plant, a spe to, that from which th

Be that as it may, a

of the blood red forms, India might obtain a supply of oranges in

The Sweet Orange

CITRUS Aurantium.

the hot season, the time when these fruits would be most accentable. Speaking of the Guitanwala oranges Dr. Bonavia says Colonel Clarke introduced these from Malta in 1852-56 Dr. Bonavia himself in-- -- -- T in 1863, and Mr C Nickels

RACES OF ORANGES

2. Prior to the Mutiny blood it there must have been earlier From these centres, however,

the cultivation of the red oranges has been greatly extended, so that they are now met with in most districts in Upper India. At Poona a blood orange is grown under the name of the Mussembi, a name given

1237

opinion, simply perfect I thought them equal to that of the blood oranges of Malta." "Mr. Steel states that the soil on which they grow is - '. But the real secret, he thinks, is

> there is a suitable soil and climate ' is also skill to turn these materials to

oranges, and therefore would not compete with the samara oranges, which flood the Calcutta and Bombay markets from Silhet and Nagour." Mr. Steel reports that in February they are "barely ripe, and would remain on the trees till the middle of March Last year, some by careful packing were kept in good condition till July"

Race 4th Mandarin. 1238

the true Mandarin, while found in Ceylon, does not exist in India Mr. C B Clarke, on the other hand, says the cultivation of this form is rapidly extending in the Khasia hills Dr. Bonavia recommends its introduction in "the highlands of Bengul," "where it would be out of the influence of the hot winds," which have killed or rendered useless all the plants grown in Upper India,

10 the

Nagpur

1.—ORANGES OF SILHET AND THE KHASIA HILLS -A most instructive paper appeared on this subject in the Journal of the Agri -Horticultural Society of India, from the pen of Mr. C. Brownlow (Vol 1, Part IV, New Silhet. 1239

342

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The Sweet Oranges of Silhet.

m. ORANGE PRO

DUCTION IN

Series, 1869, p. 372). Mr. Brownlow gives the fullest particulars regarding the "Orange groves of Shalla," his paper being a model after which all

tion, concernin, and transport are nextruny disposed or. Indeed, so admitably has Mr. Brownlow fulfilled his task that any abridgment of his paper must mar its usefulness. The limited space at the writer's disposal precludes the reproduction of the entire paper, and the reader who may be specially interested in this subject is therefore referred to the original;

Soil.

wack acade and that for hoods mondate the land in spring fide, thus is an uring the soil and preserving its fertility. "The land is flat, having a slight slope away from the river, there are a few points that rise above the gen-

received equal to dry 100

Soil dried at 212°F. 6 09 Alumina Peroxide of iron Lime 119 Magnesia *8o Alkalies (by difference .15 Silica solution 12'20

The Sweet Oranges of Silhet,

CITRUS Aurantium.

"It will be observed that this is a very siliceous soil, proceeding from the decomposition of siliceous rocks alone It contains no carbonate of limes and is a very open and porous soil "

ORANGE PRO-INDIA

CULTIVATION—The seed is sown in January and February, thickly in troughs or boxes in about 6 inches of soil. These seed-boxes are raised

Cuitivation. 1240

root They are transplanted into a nursery in the grove; here they remain until retransplanted to their destined places in the grove. The system seems defective and the nursery is only once a year weeded, vis., in October Grafting is quite unknown, and no care seems to be spent on the selection of the seed

Pruning. 1241

COLLECTION AND PRUNING -Each collector has a ladder, about 20 Collection and feet long, made of light bamboo A coarse net bag, held open at the mouth by a cane ning, depends on his back by a strap passed over the right shoulder and chest. Into this he throws the oranges and before descending he removes the withered leaves and dead branches, or cuts out boughs injured by the loranthus parasite that does such damage to the plants. "The orange trees receive no other handling than the above, they are never systematically pruned or thinned, and are allowed to retain just what fruit they set, and yet the crop turns out wanting neither in size, flavour, nor abundance Contrast with this the elaborate summer and winter pruning of the French gardens and the systematic cultivation and

the dogs have come by habit to relish this food

TRANSPORT TO THE PLAINS -The oranges so collected are taken

Transport

quarry are some by participle for tice, tish, &c, to the atunanimacan boatmen at R6 a son, being R4 less than the oranges at the Shalla groves, and yet this includes the cost of cultivation, labour of plucking, and carriage to the river.

TRADE IN SILHET ORANGES.

Mr G. Stevenson, Deputy Commissioner, Silhet, has furnished the following tabular statement .-

TRADE 1243

| | | | | | | | | | BOAT TRAFFIC. | | | | |
|---------|---|---|---|---|---|---|---|---|--------------------|-----------------|--|--|--|
| | | | | | | | | | Quantity in maunds | Value in Rs. | | | |
| 1880-81 | | | | | | | | | 1,20,398 | 2,40,795 | | | |
| 1881-82 | | | | | | | | | 1,46,592 | not kn wn | | | |
| 1532-53 | | | | | | | | | 1,02,631 | 1,28,283 | | | |
| 1583-84 | | | | • | | | | | 1,14 969 | 2,27,062 | | | |
| 1884-85 | • | ٠ | • | • | ٠ | • | • | • | 1,20,884 | 2,47,352 | | | |

CITRUS Aurantium.

The Sweet Oranges of Nacour.

TRADE

Dr Bonavia, comm about 1,21,095 maunds of rupees, in favourable

to be equal to about 8

Bonavia further adds small Taking 8,05,36c

low, the figures would be 2,41,60,800, or about 210 oranges to the maund"

Nagour 1244

II -ORANGES OF NAGRUR IN THE CENTRAL PROVINCES -We have already given several passages that refer to the so-called wild oranges both of Nepal and the Central Provinces It will only be necessary further to give here a brief account from the pen of Mr. J B Fuller, as published by Dr Bonavia, in order to place before the reader a comparative sketch of these groves to complete what has been said of the khásia hills These two lo alities represent the bulk of the orange production of India Mr Fuller says - Within the last twelve years many new orchards have been planted in Nagpur, Kamptee, and other parts of the district, and orange cultivation is now spreading rap dly in other districts of the Provin e. There is a great demand for the Nagpur oranges in Bombay, and considerable quantities of the fruit are annually exported to this and other places. In the year 1885, 22 609 maunds of orange fruit were exported from Nagpur station, out of which 21,400 maunds were exported to Bombay alone

te to repeat that the North-West Pro-Nepal, Delhi, and to some extent also and Burma are practically dependent 'd orchards, Madras drawing largely

Properties and Uses-

GUM 1215 MEDICINE

Gum -The orange tree is said to yield a gum of no importance sample was sent from Masulipatam to be shown at the Madras Exhibi-Medicine -The Pharmacopain of India treats the sweet and bitter

Rind 1246

external applications

cel is useful for Orange poul-

tice is recommended in some skin attections, such is psoriasis, &c Oranges are considered to be alexipharmic and disinfectant, orangewater stimulating and refreshing. The essence is extracted by oil from the rind and flowers, and is used as a stimulating liniment ' (Dr Dymock, Mit Med W Ind)

Ainslie makes the following remarks "Oranges are in great repute amongst the Hindu physicians, who suppose that they purify the blood,

| Products of India. | 345 |
|--|-----------------------------|
| The Bitter or Seville Orange | CITRUS Lurantium, |
| allay thirst in fevers, cure catarrh, and improve the appetite Europeans made with The sind The sind addition to bitter infusions in cases of dyspepsia and fluidence. The rund pulversed and added to magnesia and rhubarb affords a grateful tonic to the stomach in gout and dyspepsia. The roasted pulp is an | MEDICINE |
| | F00D 1247 |
| grown in and about Defhi is on the average larger, but more spongy, | l |
| 1200 The produce of one tree ranges from 500 to 6000 fruits a year and the tree sometimes grows to a height of 50 feet, with a trunk 12 feet in circumference | - |
| Structure of the Wood —Yellowish white, moderately hard, close and even grained | TIMBER 1248 |
| Var a Bigaradia, Fl. Br. Ind., I. 515 [For var 11], veep 325, and for 3rd, p. 307] Botanical Diagnoss—Petiole short winged, flowers large, strongly scented, rind very aromatic, pulp bitter THE BITTER OR SEVILEY ORANGE, BIGARADIPR, Fr.; ARANGIO FORTE, II. P. ONIERANZE, Ger | Var 2 Bigaradia. 1240 |
| Syn — C VULOARIS RESSO C DUVIPOLIA, POUR Habitat — The butter orange is sery extensively grown in the warmer parts of the Mediterramean, especially in Spain and Malia In India it does not seem to be cultivated except in gardens but it is believed in Garhwal rea extends the control of the co | |
| Marmalade is chiefly made from the rind of this species, but it is in the ring of the ring | 1250 |
| cultivated in India Oil or Negoli | 1 |
| Oil and Perfamery - Essential oils are obtained from most of the species of the Litrus family Sir W O Shaughnessy, speaking of the sweet | 01L 1251 |

CITRUS Aurantium.

The Bitter or Seville Orange.

PERFUMERY

1252

Bigarade, and the oil from the flowers of the sweet variety bears the name of Essence de Nérols Pétale or Nérols Louce This statement is opposed, however, to the opinion given by almost every other writer, the neroli ofto from the sweet orange being used only as an adulterant to that from the bitter. The fresh flowers of the Bigaradia orange yield on distillation Essence de Nérols Bigarade, and if the sepals are carefully removed from the flowers, the essence is known as Essence de Nérols Pétale The latter is finer and much more expensive than the former. From the seeds Essence de Petit Grain used to be manufactured, but this is now entirely distilled from th Essence de Petet

most species of

orange leaf to adminerate neron onto. The water which passes over with the oil during distillation constitutes, when separated from the oil, Orangeflower Water (see below)

1253

The extraction of Neroli oil is chiefly carried on at Grasse, Cannes, and Nice, in South France, also in Algeria. In France, about 20,000 cwt of the flowers are annually distilled The sweet variety yields but half the amount of oil which may be obtained from the bitter, as much as

Neroll Camphor 1254

> Eau de Cologne 1255

Is are used to an enorand Eau de Cologne

3256

" is mainly consumed ii I I malaanada

1257

It is largely used in pharmacy. among the distillers of essential oils "There are three sorts of orange-flower waters found in commerce. first is distilled from the flowers, the second is made with distilled water

PERFUMERY.

Var. 3

Bergamia 1258

CITRUS The Bergamot Orange. Aurantium.

and neroh, and the third is distilled from the leaves, the stems, and the young unripe fruit of the orange tree." (Presse) "As met with in commerce, grange-water is colourless or of a faintly greenish-jellow tinge, almost perfectly transparent, with a delicious odour and a bitter taste, (Pharmacog)

ESSENTIAL OIL OF ORINGE PEEL -"Largely made at Messina, and also the south of France It is extracted by the sponge, or by the écuelle process, partly from the Bigarade and partly from the sweet or Portugal Orange, the scarcely ripe fruit being in either case employed. The oil made from the former is much more valuable than that obtained from the latter, and the two are distinguished in price-currents as Essence de Bigarade and Essence de Portugal.

"These essences are but little consumed in England, in liqueur-making and in perfumery." (Pharmacog)

Var 3. Bergamia, Fl Br Ind , I , 515

THE BERGAMOT ORANGE

Syn -C Aurantium, var. Bergamia, W & A Prodr., 98; C Lim-

Lamya-si, ot tam bus u-si, Burn References - Brandis, For Fl, S4, Dals & Gibs, Bomb Fl, Supp, 13, Voigt, Hort Sub Cal, 142, Phorm Ind at 15 , C, 47, 13,

Habitat -The Bergamot Orange is cultivated near Reggio in South Calabria, in Sicily, and in the south of France, but it is only rarely met with in India. It may be doubted how far the above vernacular names given to it are correct. The fruit, when full grown, is still unripe and green, they are sometimes known as green oranges. Some of the green oranges met with in India (and already alluded to, \$ 340) may belong to this variety.

BERGAMOT OIL

Oil -The rind of the fruit yields on expression the oil known under the name Bergamot For this purpose the fruits are used, and one hundred of them are said to produce about three ounces of the otto Formerly the oil was extracted by distillation or by expressing the rasped rand, but these processes have been superseded by the écuelle,

a special instrument described in Spons' Encyclopædia, page 1457. General Characters of the Oil -The oil, as produced he the machine

> rant tvity Ít реп-

u suctions yee (Pharmacog)

Chemical Composition - The authors of the Pharmacographia say: CHEMISTRY. "If essential oil of bergamot is submitted to rectification, the portions

1259

CITRUS decumana.

The Bergamot; The Pumelo or Shaddock.

CHEMISTRY

that successively distil over do not accord in rotatory power or in boiling point—a fact which proves it to be a mixture of several oils, as is further confirmed by analysis. It appears to consist of hydrocarbons, $C_{ij}H_{ijk}$ and their hydrates, neither of which have as yet been satisfactorily isolated Oil of bergamot, like that of turpentine, yields crystals of the composition $C_{ij}H_{ijk}+3H_{ijk}$. If 8 parts are allowed to stand some weeks with 1 part of spirit of wine, 2 of nitric acid (sp gr 12), and 10 of water, the mixture being frequently shaken

Properties and Uses—The oil of bergamot is much employed in perfumery. It has stimulant properties, but is "rirely used in medicine—It is sometimes employed to give an agreeable odour to ointments and other external applications.

Essential Oil 1261 can be obtained

0 .57

MEDICINE Julce 1262 Medicune—The Juior of the fruit possesses properties aimdar to those of lemon juice (see under Citrus Medica, evr Limonum). It is often profession juice, as the fresh juice can be readily obtained in nearly all parts of the profession juice, as the fresh juice can be readily obtained in nearly all parts of the profession juice of the profession of the

on Chaland and No Vork

1263

Citrus decumana, Linn , Fl Br Ind , I , 516

THE SHADDOCK, PUMELO, OF POMPELMOS, THE FORBIDDEN FRUIT, PARADISE APPLE, Eng., POMPELMOUSE, Fr., POMPELMOES, Sp.

The word Pumelo is a contraction of "pomum melo," the melon apple.

Vern —Maha nibu chakotra baturi nebu sadaphat Hind, Bitivi nebu, nahi nimbu, chakotra baturi nebu sadaphat Hind, Bitivi nebu, nahi nimbu, chakotra bator rebu, Beno, Chakotra, Pa, Bjore,

References — 1 = 51,58 571,

References — 1 = 6 Girwi
Familyon A Steph 62,50

Slewart, Po Mat Med Cal 141 Fluck C Hand, I narm u.g., 11], San Med Hi id., 127 O Shaughnessy Beng Dirhens, 233, Balen Jonell, Pb Pr., 334 Cook Gums and Gum resuns, 13 Altinson Him Dist 7107 Attinson, Gums and Gum resuns, 16, Dirlzood Bomb I rod, 141, Lus

The Pumelo, The Citron

CITRUS Medica.

boa, U Pl Bomb, 148, Smith Dict, 375 Treas of Bot Ure, Dict Arts and Manuf, 111, 765 Kew Off Guide to the Bot Gardens and Arboretum, 64, 65, Trop Agri, 117, Simonds Trop Agri, 441

Habitat—A native of the islands of the Malay Archipelago, more particularly abundant in the Friendly Isles and Fiji Introduced into India from Java and into the West Indies by Captain Shaddock, hence the name Shaddock. It is cultivated in most tropical countries In India and Burma it is a common fruit tree. It is, however, more frequent in Bengal and Southern India than in the North-West Prov The vernacular name Batavi nebu suggests its having been originally brought from Batavia "The fruit is very large, weighing sometimes ten to twenty pounds, roundish, with a smooth pale-yellow skin, and white or reddish sub acid pulp. When the fruits attain their largest size, they are called pompoleons, or sompilmousses, those of the smallest size form the 'Forbidden fruit' of all the English markets" (Treasury of Botany)

Gum -Said to yield scantily an unimportant gum. In 1855, Lieutenant Hawkes sent to the Madras Exhibition a sample of this gum (Cooke)

a a

Mediane -Mr Baden Powell says that the PRUIT is nutritive and re-It contains sugar and citric acid, with much essential oil in the peel The leaves are said to be useful in epilepsy, chorea, and convul sive cough

Food -This tree is a favourite with the natives of India, as it gives fruit all the year round , flower unripe and ripe fruits may be seen on the same tree at once There are two varieties one with whitish, and the other with redd shipulp. Besides, the individual fruits differ from one -ference, and also in quality

Bonavia (in the paper to

"The best pummelows vs of the Bombay market -1 1150

Citrus Medica, Linn , Fl Br Ind , I , 514 mt.

enance the amethoda 1

1260

may be found to be the mountain tracts of Eastern Bengal, more particularly of the Khasia and Garo hills, while the latter is of a more northern character, extending along the foot of the Himalaya to the Panjab

CUM 1264

MEDICINE Fruit

1265 Peel T266 Leaves

1267 FOOD CITRUS Medica.

The Citron.

Mearca

The sweet lime (C Limetta) appears to be the southern manifestation of

1270

frontier.

This species includes as varieties the Citron, the Lemon, the Sweet and the Sour Lime.

Var. 1. Medica proper.

THE CITRON, CEDRAT-TREE, ADAM'S-APPLE, Eng.; CEDRATIER, CITRONIER, Fr., CIDRATO, CEDRO, II.; CIDRO, Sp.; CIDREIR, Port.; CEDRATEN, CITRONENNAUM, Germ.

Considerable difference of opinion prevails as to the origin of the word Citron. It is presumed that the Median apple was synonymous with the

Syn.—C AURANTIUM, var MEDICA, W & A. Prodr.; C. MEDICA, tar. A, Linn, Citrus Medica, Risso

Vern —Bijaura, limbu, kutla, bara nimbu, turanj, nimbu, limu, Hind.

much resembles a small punicio.

The Citron: The Lemon.

CITRUS Medica.

According to Gallesio it was introduced into Italy about the third or fourth century. The Jews cultivated citron when under the Roman rule, and used the fruit, as at the present day, in the Feast of Tahernacles: each person bringing a citron in his hand. Dr Royle found the species growing wild in the forests of Northern India, and, as already stated, it may therefore fairly be conjectured that the original home of the citron was in India. It has now spread over the whole of the civilised world, and even in cold regions it is cultivated under artificial heat.

Gum -Said to yield scantily an unimportant gum. Sent from Masulipatam to the Madras Exhibition in 1855.

GUM 1271 01L 1272

MEDICINE Rmd

> 1275 Leaves

1276

1278

Juice 1277 Marmalade.

(Presse)

1273 Puin 1274 Seeds

The distinct water of the But is used as a sedative (Yerr-Book, Pharm, 1874, 623)

Special Opinions - 6 "The rind is made into a marmalade and is an antiscorbutic" (Surgeon-Major A. S. G Fayakar, Muskat) "It is made into preserve and is used for dysentery" (Surgeon-Major T Robb, Ahmedabad)

Food .- The PRUIT IS described in the Flora of British India as large, oblong or obovoid; and usually warted, thick, tender, aromatic; pulp scanty, sub-acid The rind makes good comfit, the pulp is also preserved in sugar. Both fruit and preserve are somewhat bitter to the taste. The rind of the fruit candied is well known as a delicate sweatment Atkinson says the wild fruit is used for picking (khatai), candled Rind.

Food 1270 Comfit 1280

œ l

> 1403 TIMBER. 1284 DOMESTIC

Limonum, sp Risso. The word lemon is from the

1285 Var 2 Limonum. 1286

b irá nimbu or large nimbu.

| CITRUS Medica | The C: |
|--------------------------|---|
| | The sweet lime (C. Limeter) The species, and the writer wor't fareast, fro to in China, even all China to not in China, even all China to not a china, even all China to not wild, the plant is ro and it is possible it may have cone of This species includes as varieties the C. the Sour Lime |
| Var 1 Medica. 1270 | Var. 1. Medica proper. The Citron, Cedrat tree, Adva's all Citronies, Fr., Cidento, Cedro II Pert / CEDRATEN, CITRONENALM, Gr |
| | Considerable difference of opinion prevails as to ti Citron It is presumed that the Median apple was syl |
| | ., |
| | : •. |
| | |
| | |
| | Syn.—C AURANTIUM, DAY MEDICA, W & A Prodr, C. MEDICA LAY! |
| | Vern P - 1 1 1 1 2 2 2 2 2 2 2 1 1 1 1 1 1 1 1 |
| | . Duk, |
| | Gara |
| | jahara Arap, |
| | Iuran; Pers Thanba ya, shauk ta kera, shouk ta kwon, shous. |
| | Ghb; Arm 142 are (|
| | Dity, "ostr, " |
| | |
| | and the warm |
| | |

The Citron: The Lemon.

CITRUS Medica.

According to Gallesio it Capusty third or

rule, and nacles:

stated, it may therefore fairly be conjectured that the original home of the citron was in India. It has now spread over the whole of the civilised is an a cold remons it is cultivated under artificial heat. ortant gum. Sent from Ma-

. -- Consumer to I recomblene

GUM 1271 1272

(Presse) Medicine .-

SPEDS, LEAVES,

To one who has taken a poison injurious to life, it may be given, producing

fα of the fruit is used as a se the ting is made into a marmalade and is an antiscorbutic" (Surgeon-Major A. S. G. Jayakar, Muslat) "It

is made into preserve and is used for dysentery" (Surgeon-Major 7 Robb, Ahmedabad

Food .- The PRUIT is described in the Flora of British India as large, oblong or obovoid; and usually warted, thick, tender, aromatic; pulp scanty, sub-acid. The rind makes good comfit, the pulp is also pre-served in sugar. Both fruit and preserve are somewhat bitter to the taste. The rind of the fruit candied is well known as a delicate swea - 1

othe they

Var. 2 Limonum, sp Rissa.

The word lemon is from the Arabic limun, and this, through the Persian, is the Hindi limu, limbu, or nimbu, probably adopted by the Sanskrit people. Much stress is by authors lad non the

MEDICINE. Rind 1273 Pulp. 1274 Seeds. 1275 Leaves

1276 Julea 1277 Marmaiade. 1278 F000. Fruit 1270 Comitte

DOMESTIC 1285 Var. 2 Limonus 1286

Medica.

THE LEMON, Eng. : CITRONNIER, LIMONIER, Fr.; LIMONE It.; CITRONE, Germ.

Syn. -C. Aurantium, var. Limonum, W. & A Prodr, 98; C Limonum, Wall Cat , 6399; C. MEDICA, Willd. (according to Roxb), Fl Ind , Ed, Vern — 2 —

BURM , Lokka-dehi, SING D.

and Drugs, in As Res, Vol XI, p 164

is highly probable the lemon is of much more recent origin than the citron

The question has been recently raised as to the highest altitude oranges and lemons could be grown in India A writer in the Agn -Horticultural Society's Journal said they could not be grown above 5,000 feet. Madden refers to the lemons grown at Almora, the fruit being collected in summer and ripened in straw. The altitude given above is perhaps correct for the Indian species generally.

HISTORY OF THE LEMON History.-Dr. Royle is said to have found the tree growing wild in the north of India, and Atkinson reports that Madden spoke of the jamira or wild variety in and in the Water It and If many wild plants were known

and Romans, and that its c

lemon. The latter was

gardens of Oman into in the thirteenth century, very well describes the temon which he had

De Candolle states that the Conquests of the Arabs. On their spreading over the vast regions of from the writing

seen in Palestine; and doubtless it was by the Crusaders first brought

LEVON OIL.

OIL 1287

| The Lemon. | CITRUS Medica. |
|--|-------------------|
| in France. A brief account of the methods of extraction, as given in the Pharmacographia (p. 110), may be reproduced here:— Sponge process.— The workmin first cuts off the peel in three thick longitudinal slices, leaving: a little peel at either end a little peel at either end The latter are allowed to thus: the workman seatest piece of sponge, wrapping it round his fore-finger. With the other he places on the sponge one of the slices of peel, the outer surface downwards, then presses the zest side (which is uppermost), so as to give it for the moment a conver instead of a contact form. The vestcles are thus rup- tured, and the oil which issues from them is received in the sponge with which they are in contact. Four or gives to each slice of peel, which done lo to freel has attached to it a small trives to avoid pressing the litter. I workman wrings it foreibly, receiving its contents in a coirse earthen hold which | |
| tino a tupe about an inch in diameter and hye inches in length, closed at its lower end. This vessel, which is called an equille a piquer, lins, therefore, some resemblance to a shallow, dish-shaped funnel, the tube of which is closed below. The workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman takes a lemon in the hand, and rubs it over the shallow are workman to the shallow are workm | |
| essence ourless Dest yellow a n faint says th. Piesse | CHEMISTRY. |

the toregoing boils at 176°C at Lasty, a small quantity of cymere and of a compound acetic ether, C, H, 3 (C_{11} , H, O_{11} , would appear to occur also in oil of lemons. The crude of of lemons already yields the crystalline compound C_{10} H_{10} + Z II O_{11} , when saturated with anhydrous

| 354 | | | , | | D | ictio | ary | of t | he E | conc | mi | ; | | | | |
|-------------------|---------------|-------------------------------|----------------|---------|---------|---------|--------|---------|-------|---------------|----------|------|--------------|--------------|------------|--------------|
| CITRUS Medica. | The Lemon. | | | | | | | | | | | | | | | = |
| PERFUMERY 1291 | a co fo | e sol Pro flavo mbin | iatioi nurs | n wit | Fro | emary | , clov | es, a | nd ca | rawa it sh | y, fould | or p | erfu t be | ming used | pow for | ders per- |
| ļ | | | , | | | | • | | • | | | | ٠, | | | |
| { | ; | • | | | | | | | | | | ٠, | • | • | ċ | - |
| 1292 | | : | | • | ; · | | | | | | | | | : | | ٠. |
| , | ١. | | ಬುಷ | li alli | LISCOLI | Julic . | and re | li ik t | ıanı– | ~p: :: | narn | yan | talk | anne | seco | ınu- |

arily, antacid It forms the best remedy for scurvy, and an excellent drink in fever and inflammatory affections. It has met with success in acute rheumatism, dysentery, and diarrhosa. It also forms an antidote to acro-narcotic poisons. (Pharm. Ind.) Mr. Baden Powell says that it is considered by In bilious

with port wine Medica frech 1

the relief .

such as p Sarangadhara recommends the use or tenion Juice with yaeakshara and honey (U. C. Dutt).

The best substitute for lemon juice is a solution of about eight drachms of citric acid in sixteen ounces of water, with the addition of a few drops of lemon oil Lemon juice may also be used in preparing effervescing diaphoretic and diuretic draughts. The relative proportions of lemon juice and citric acid with the alkaline carbonates, for the formation of effervescing draughts, are as follow:-

Lemon juiceor Citric acidto 20 grains of Fi drs mes Fi drs vi Bicarbonate of Potash, GLS XIA grs xxiv Carbonate of Ammonia, Bicarbonate of Soda. grs. xvn

The lemon juice, being liable to spontaneous decomposition, speedily becomes unfit for medical use. "One of the best methods of preserving the juice is to allow it to stand for a short time after expression, till a congulable matter separates, then to filter, and introduce it into glass bottles, with a stratum of almond oil or other sweet oil on its surface. It will keep still better if the bottles containing the filtered juice be suffered, before being closed, to stand for fifteen minutes in a vessel of boiling water. Another mode is to add one-tenth of alcohol and to filter. The juice may also be preserved by concentrating it either by evaporation with a gentle heat, or by exposure to a freezing temperature, which congrals the watery portion, and leaves the juice much stronger than before." (U S Despens , 15th Ed , 849)

Dr. Charles Rice of New York states that the bank of the root has been used in the West Indies as a febrilinge and the seeds as a vermilinge.

CITRUS The Lemon, The Sour Lime Medica. MEDICIRE 6. Lemons as well as other fruits of the same order, contain a principle-hesperidene By some chemists this substance is described as bitter and crystalline and by others as tastaloss Cladetone of orange pee A glucoside тапа. (Sur Citric acid Citric Aci It occurs in colourless crystals, is very soluble in water, less soluble in 1203 rectified spirit, and insoluble in pure either. The chief use of citric acid in medicine is in the preparation of effervescing draughts and refrigerant drinks does he not be s has (Sur, Syrup. are given for the preparation of this substance "Take of fresh lemon 1201 peel two ounces, lemon juice, strained, one pint, refined sigar, two pounds and a quarter Heat the lemon juice to the boiling point, and having until with and should have the specific gravity I 34." Special Opinions —§ 'Lime juice—Most useful in dysentery with sloughing of the mucus membranes. I have given 12 ounces a day in apparently hopeless cases with success" (From a Contributor) "Lemon oil mixed with glycerine is applied on the eruption of acne (Surgeon R Gray, Lahore) Lemon juice and gunpowder used topically for sca-bies' (Surgeon Major E C Bensley, Rajshahye) 'The fruit in the form of pickle is useful in hypertrophy of the spleen" (Surgeon F C Penny, Amritsar) Food -The lemon juice is used largely in sherbets and cooling drinks FOOD The fruit is also pickled 1205 Var 3 acıda. 1206 THE SOUR LIME OF INDIA Sun -C Acina P - P F F F F an concine discu Vern -Lebu, nebu limbu nimbu 1 ... - - 14 ? Limbu nimbu pati nebi nebu BENG , Nimba nimbu GUI , Limbu, i mich-cham-pasham, ele pandu némmapundá jonatam naranna feri

References—Brandis, Fer Fl 52, Stemort, Ph Pl, 19 DC Origin, Cull Pl, 179 U C Dutt Mai Med Hind, 125, Annie, Mol Ind. 1, 133 Altinson Him Dut. 170, McCann Dux and Tans. Bengal, 150 Arv Off Guite to the Museum, 25, hew Off Guile to the Bot Gardens and Arboretum, 64. 2 A 2

Tambira limpáka, ni Limun, limue-kamis +

Thanbaya, samya si, tambiya si Burm Dehi, Singh

| CITRUS Medica | The Sour Lime. |
|------------------|--|
| DYE 1297 | Habitat —Wild in the warm valleys of the outer Himálaya, from Garhwal and Sikim to the Khásia and Garo hilis, Chittagong, and probably also the mountain tracts of the Central Frovinces and of the Western Peninsula and the Satpura mountains of Central India. It according to native gardeners. There are many minor cultivated forms, differing chiefly in size. The fruits of all are more or less round, smooth, with a shung rind, green, or only inged with yellow when ripe. Dye—The leaves of this plant are used in tanning in Manhum. This seems to be doubtilly at most, the leaves can be used only as an |
| MEDICINE | |
| 1208 | |
| | |
| | |
| | inferior to a superior, it is beautiful to behold, cooling and fragrant to the smell, the juice of it rubbed upon the head will soothe the ravings of frenzy, and the rind of it dried in the sun has the power, when land |
| | |
| | |
| F00D 1299 | swelling caused by musquito bites (brigate surgeon f in internal food—The Sour Lime of India has "flowers small, fruit usually small, globose or oxot" U C Datt says "Th |
| | fresh juice, squeezed |
| Fickle 1300 | e and salt is a popular and effectual by excess in eating, or by indigestable rst rubbed over a stone, or their rind |
| | from other fruits of the so the addition of commons are preserved in possels: or jaunpur and Aza value is the plat in this part the larger ones or Bonavia remarks everywhere, and even where no other Citrus occurs, seme kind of time is sure to be seen Nevertheless, it is astonishing that so occumon a thing so useful a fruit, and a tree so easily raised from seed, is not be found in the will great of the North-West Fronces. There is probably |

CITRUS

Medica.

| not a village in the whole of Ind a where the kights stimbu would not readily grow" "Although they are called limes, I believe them to be an | F00). |
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| • | |
| ` ; | |
| ar. 4. Limetta, W. & A. Fl Br Ind , I , p 515. | 1301 |
| THE SWEET LIME OF INDIA | - |
| Syn — C Nobits Love, as in Kurz, For Fl Burm., I, 199, Wight It 158 C Linserta Risso I might be asked has the C Linserta, Risto, sweet or bitter fruits? if the latter, it might be weed as a cynonym of var acada. Vern — Mithe nebu, netwid, reside amust blad, Hixto, Mitha nebu, Boso Mita numba, Pa, Mitha landus, Gul, Boose Elemechem TAM, Nomma fondu, gajamima, Tet, Ermutich narracum, MALA, Madhukarkatish, Sass, Thanbaya Burm, Deka, Sing Reference. | |
| | |
| Habitat — Commonly cultivated in most parts of India and Burma, Most probably a native of Southern India, Wight says it is indigenous at Kolagberry in the Nilgiri hills | |
| Botanic Diagnosis—Leaves with unged petioles, flowers small, white, fruit globose or ovoid, shortly mamiliate, rind with concave vesicles | |
| vesicies . | |

The times approach much nearer to the true oranges than do any of the other forms of C. Medica Indeed, it is difficult to say how far the published accounts of C. Limetta have become mixed up with C. Bigaradas, and the vernacular names given to both these forms, as

medicine 1372 FOOD. 1373

preceding variety.

Var. S. Luma, W & A . Fl Br Ind . I. StS

THE SWEET LEMON, Eng., LUMIE, Fr. & Germ.

Vern -See C LIMETTA

Botanical Diagnosis —Leaf petioles simply margined, flowers tinged with red, fruit bright yellow, ovoid oblong, with a long curved mamilia, rind with convex vesicles, pulp sweet,

C 1304

| 356 | Dictionary of the Economic |
|-----------------------------------|---|
| CITRUS Medica. | The Sour Lime. |
| DYE. 1297 MEDICINE. 1298 | Habitat—Wild in the warm valleys of the outer Himálaya, from Garhwal and Sikkim to the Khásia and Garo hills, Chittagong, and probably also the mountain tracts of the Central Provinces and of the Western Pennsula and the Satpura mountains of Central India. It was the large time, but this is the lime itself minor cultivated forms, with a similar time, green, or only tinged with pellow when the Dye.—The leaves of this plant are used in tanning in Manhum. This seems to be doubtful; at most, the leaves can be used only as an adjunct to the tans, imparing an odour to the leather. Medicine—"Lime-juice is much used in medicine by the native prac- |
| | |
| F00D 1299 | Monghyr). Food — The Sour Lime of India has "flowers small, fruit usually small, globose or oxost U. O Dutt says: "If fresh juncs, squeezed. |
| Fickle 1300 | e and salt as a popular and eliteture by excess in eating, or by indigentulle rat rubbed over a stone, or their mid levy are then steeped in june obtained from other fruits of the sort, and exposed to the sun for a few days with the addition of common salt. When crisp and of a brown colour, they are preserved in pocedium vessels or glass jars. This preparation is the contract of |

| | The Sweet Lime, The Sweet Lemon. | CITRUS Medica, | |
|-------------|----------------------------------|-------------------|--|
| | | F00.). | |
| | 1 | | |
| | | | |
| | | ι | |

Var. 4. Limetts, W. & A., Fl Br Ind , I , p 515.

1301

THE SWEET LIME OF INDIA.

Syn—C NOBILIS Lour, as in Kurs, For Fl Burm., I, 197, Wight Ic, t 538 C LIMETTA, Risso lim ght be asked has the C LIMETTA, Risso sweet or bitter fruits? if the latter, it might be viewed as a synonym of var actida

Vern —Mitha nebu, nembá, mitha amrat þhal, Hind , Mitha nebu, Beng Mita umbo Pa , Mitha limbu Guj , Boma , Elemitchum Tam ; Nemma þandu, gajannima Tel , Eramitchi narraum, Mala , Madhukarkatika, Sans , Thanbaya Burm , Deht, Sing

Habitat —Commonly cultivated in most parts of India and Burma, Most probably a native of Southern India, Wight says it is indigenous at holagberry in the Nilgin bills

Botanic Diagnosis—Leaves with unged petioles, flowers small, white, fruit globose or ovoid, shortly mamillate, rind with concave vesicles

The lumes approach much nearer to the true oranges than do any of the other forms of C. Medica Indeed, it is difficult to say how far the published accounts of C Limetta have become mixed up with C Bigaradia, and the vernacular names given to both these forms, as

340 bilis

ce" m

1302 1302 1303

1301

Food —The fruit is both eaten fresh and after being preserved or cooked in various ways, but the juice is not so much valued as that of the preceding variety

Var. 5 Lumia, W & A . Fl Br Ind , I , 515
THE SWEET LEMON, Eng.; LUMIE, Fr. & Germ.

Vern -See C LIMETTA

(Surgeon + C 1 enny, circuisar)

Habitat —This form is very little known in India, and occurs only occasionally in gardens. It is probable that, with the lemon, this is not an Indian form. Atkinson and many Indian writers use the terms "sweet lime" and "sweet lemon" 35 s, nony mous.

Botanical Diagnosta —Leaf petioles simply margined, flowers tinged with red, fruit bright yellow, oxoid oblong, with a long curved mamilla, rind with comex vesicles, pulp sweet

C 1304

| 330 | Dictionary by the Economic |
|---|--|
| CLAUSEN. indica. | The Mandarin or Maltese Orange. |
| 011 1305 | Essential Oil.—Dr. Rice says that this oil is prepared at Squillace in Calabria by mechanical means. |
| 1306 | Citrus nobilis, Lour. THE MANDARIN ORANGE, sometimes also called the MALTESE ORANGE |
| | Syn —Cirrus chiversis and C instributus Vern,—Probably the same as for C Limetra; it is the kán of China Habitat.—Cultivated in China and Cochin-China, where it appears to |
| | |
| 1307 | has been greatly ext the blood oranges of gardens at the begir tidally in Sicily and Botanical Diagni face, spherical but yellow, pulp almost blood red with a peculiar flavour, both leaves and fruit have the same odour. |
| ENCOURAGE- MENT OF CULTIVATION IN INDIA. | the state of the s |
| | |
| 1308 | at 1 1.1 - who we want are of December and Rieman |
| | sour, and jucy jenon known in the rangua as guigus; and that bollow should prepare to meet the Indian demand for its excellent pointies. In this way, with extended railway communication, free interchange might be made with the various provinces and a more constant and uniform supply stricting the which they thereoughly conversant with the best modes of dealing with it, not only when they there of the cultivation and propagation, but also with the best modes of packing and preserving the fruit for a long time." |
| | CLAUSENA, Linn.; Gen Pl, I., 304 |
| 1309 | Clausena indica, Oliv. ; Fl. Br. Inil. I., 505, Beddome; RUTACE V. Syn.—Piprostuls indica, Dals; Jols. & Gibs, Bomb. Fl., 29; Ber- oran, NITIDA, The, Fram. Crylon Pl., 40. Vem.—Mignet-bardyichigasi, Sivo Reference.—Libsa, U. Pl. of Bomb. 33. |

CT ATTICEDS Front of Ree. nurnurea.

Habitat -A shrub or small tree, met with in the Western Peninsula from the Bombay Ghats to the Anamally Hills, and also in Ceylon Structure of the Wood.—Close-grained and hard, adapted for the lathe.

TIMBER 1210

Clausena pentaphylla, DC , Fl Br Ind , I , 503 Sun - Auvols Pentapuvita. Rosh . Fl Ind . Fd C.B.C. 221 Vern -Rattaniote, surimukha, tevrur, HIND

1311

MEDICINE Leaves

CI AVICEPS

Claviceps purpurea, Tulsane, Fungi

THE ERGOT FROOT OF RYE, HORNED OR SPIKED RYE (Secale Cornutum) Bust

SVII - SCLEROTHUM CLAVUS DC FROOTETIA ABORTIFACIENS, Quek. OIDEUM ABORTIFACIENS, Berk & Br

References — Phorm Ind., 251, O Shaughnessy, Beng Disp., 621, 673, 76, Balfour Agri Pests of India, 61, 115, Fluck & Hanb., Pharma cog 740, Benil & Trim., Bled Pl., IV., 303, U.S. Dispens, 15th Ed., 556, Dr R Tytler (in the C ! Mad DI . To ..

reports that barles in i a disease very similar ..

1312 1313

MEDICINE.

produced within the palese of the common rie. Secale cereale, forms the officinal part "In medicinal doses ergot acts principally upon the mus1314

tids, from the uterus

"In overdoses ergot produces nausea, vomiting, colicky pains, head-ache, and sometimes delirium, stupor, and even death. Taken for a

seem of good quality but which contain a fungus, most probably an ergot

Some writers have attributed to an ergot the poisonous qualities which kesars (Lathyrus sativus) is said to possess. An indulgent use of this pen

induces a paralysis of the lower limbs which is generally incurable

Clay is a hydrated silicate of alumina, which is expressed in mineralogy by the formula 11, Si, O.+11, O which may be said to be Si O,

Properties and Classification - The pure clay, defined above, when it occurs, is p are, however, clay, shale, c these would. or less clay

on, the peculi superficial deposits in river-basins, estuaries, or dried up lakes city is derived from a decomposition of felspar, from which the silicates of potash, soils, Ac, have been washed out. The purer forms of clay are

the former makes red clays, and the latter dark or even almost brick ther hich n of silicate, and

e form imparted termed "clay."

These facts naturally lead to an industrial classification of the class, and in dealing with those met with in India we shall, as far as possible, take them up in the alphabetical order of their better known names in preference to attempting a scientific assortment.

I.-BRICK CLAYS

In the early part of the present century, it was thought necessary to import bricks into India from I ngland. It was soon discovered however, that in almost every district clays suitable for this purpose existed

C. 1318

1318

Brick-Clay.

CLAY.

abundance, for bricks were employed in many buildings in India long anterior to the arrival of the English Some of an enormous size are found in the ancient monuments, and in more recent times others much

is to blame Of course there are some clays so impregnated with lime - able to the mannof the large rivers from these impu-

from these impuat Akra near Calied out annually." idia see the Rurki

11 —EDIBLE AND MEDICINAL CLAYS AND FULLER'S EARTH.

1319

In most bezars in India a fine unctuous or oily clay is sold as a drug or as an article of food eaten by externite women, or tuned by ladies as a cosmetic. Allied to this is the clay used to effect caste markings on the forelead. Baffour says such a clay "is excavated from pin near Koluth in large quantities, and exported as an article of commerce,

Manipur, which he was informed was regularly eaten by the women

Multani. 1320

inities comments of an imposed fatin shown as admy-roath (a Feenan name). "This is generally imported from Bassorah and the Persan foulf, as its name implies. It is used in tonic preparations and in irregular menses and with benefit from the ron it contains." He states that the earth in question is a silicate of alumna with lime and from U. O. Dutt (Sans. Mat. Mad.) after dealing with red and yellow other (which see) or the gene malf in Beng, and gairska in Sans, adds: "besides gairska several other varieties of earth are described."

not reneving bleeding from internal organs. If this earth be a natural product of Surat it is nowhere (so far as the writer can discover) de-

| 362 | Dictionary of the Economic |
|-------------------------------------|--|
| CLAY. | Edible Clay. |
| 1321 1322 1323 | which bore the name of gagni or gari; the shop-keeper could, however, as indication quasis are most straightful and the straightful and the shop which is a similar to equasis are most straightful and the st |
| Sabun Miti. 1324 1325 1326 | ang in the Bhagalpur al mitti, a cornestible carth, the precise source of which is not known. Ajmir titons that fuller's Over 2,000 camel- |

| Fire Clay | CLAY. |
|---|--------------|
| Bombay and Sind -A pale greenish clay is found in Western Sind, which is used for washing, and is also eaten by pregnant women. Panjáb -Dera Chan Khan and Multan alteady alluded to, in the Salt range at Nilawan, Mr. Wynne says a layender-coloured clav is found which is used as a fuller's earth. | 1327 1328 |
| III.—FIRE CLAYS. These derive their name from their refractory nature—that is to give the standard of national fiving. Lays Lays | 1329 |

1330

ciavs are producable at Streepermatour, Tripasour, Chingleput, Michapoliam, and Cuddapah, indeed, are very common in many parts of India, and bricks can be made that resist the action of great heat. A clay found at Beypore, 20 to 30 feet below the surface, is used for fire-bricks and for

1331

as follow --"(1) First experiment in September 1874 by Theodore W. H Hughes, Esq., F.O.S., ARSM, Officiating Deputy Superintendent, Geological

Survey, India. "The fire-bricks tested by me were furnished by the firm of Messrs Burn and Company The materials from which they are made are very refractors and expable of resisting high temperature, without sensibly fusing. That, compared with Stourbridge fire-bricks, they are somewhat superior.

CLAY.

Pipe Clay.

.

Whitelaw, Manager of the Bengal Iron Company's proposed works and

others, who agreed in the favourable estimate formed of the quality of these bricks? "In addition to the foregoing we beg to quote you the opinions of D. W.

Campbell, Esq., Locomotive Superintendent, East Indian Railway, and J. Blackburn, Esq., Engineer and Manager of the Oriental Gas Company. The former, in a letter to us, dated 23rd February 1875, writes:"(2) I have had the fire-bricks and fire-clay tried here, they are both

very good; I will send you a requisition as soon as present stock is exhausted.3

"And Mr. Blackburn, in his letter of 2nd March 1875, states as fol-

"(3) The Gas retorts made for the Company by your firm two years ago have since been kept in constant use at a temperature of about 2,000° Fht, and they have been found fully as durable and effective as those of the best English manufacture."

"We trust that the above extracts will be found to contain the information required by Dr. Watt for the Dictionary of Economic Products, but in case he wishes to analyse the clay himself, we have pleasure in sending herewith a few sample pieces obtained from the coal measures of the Rangani District,"

IV .-- PIPE CLAYS.

This is known as Namam in Tamil and Kharra in Dukhni; its English name is taken from the fact of its being used to manufacture tobacco-pipes. It much resembles China-clay, only that it possesses more silica Balfour says "This is found in abundance in several parts of India, the Hindus employ it for making the distinguishing marks on their foreheads, and (moistened with water) it is often applied Lat -las all as to parte of

between Terany and Kauray in Trichinopoli.

V .- POTTERY CLAYS.

These might be popularly referred to three sections or degrees of purity: (a) porcelain or kaolin clays, (b) ordinary white or glazed pottery clays, and (r) red or tile and flower pot clays. In every province, indeed in almost every district of India, one or other of these

1332

1333

Pottery Clay. CLAY.

Bengal, is attempting to compete with European imported articles

grazed pottery is less known than is the case in many taits of indian Mr. Kipling (Fournal of Indian Art) says "No substance resembling the fine clays of Dorsetshire, Devonshire, and Cornwall, is known to the

social status, no craft, excepting, perhaps, that of the leather-dresser, is held in lower setteem than the potter's trade in Hindustan, the Deccan, and South India? Mr Kipling next distinguishes the two classes of workers in earth, use, Kumhaers and Kashigars The former are the common village potters who "produce wares which, though of hitle technical value as pottery and of small commercial importance, are often good in colour and form, and perfectly fitted for the purposes they are intended to who are only to the found in the Panigh and each first and earther war who are only to the found in the Panigh and each first few years in the town of Bombay and at Khurja in the North-Western Provinces The name of the trade is Persian, derived probably from

into India by the Mussulman invasion, and not by means of the friendly intercourse which there seems reason to believe subsisted at various times with Tibet and the further East "Sir George Birdwood (Indian Arts)

| 366 | Dictionary of the Economic |
|-------|---|
| CLAY. | Pottery Clay. |
| | par and kaolin are obtainable in different parts of the district." "In the South Arcot district a fine plastic clay occurs in the Cuddalore beds neat the south bank of the Guddalore," but it contains small quantities of him and iron, the latter giving it a pinkish tint. In North Arcot the granite extent, and, according to ry considerable supply of enjoy some reputation, but offerey clays exist in great |
| | abundance in the district of Chingleput, more especially at Sripermatur. From the beds exposed at Coopum a supply has been taken for the Madras School of Art. |
| 1335 | 2nd, Mysore.—For many years it has been known that kaolin earth im Banga- have been sent from |
| 1336 | 3rd, Mangalore.—As early as 1811 Dr. Christie discovered, in associa- tion with the laterite, an extensive deposit of what he conceived to be |
| 1337 | pure porcelain clay 4th, Bengal - In Orissa white clays occur in the Mahanadi valley of Rajmahal age. These clays are used by the natives for ornamenting |
| | suitable for the manufacture of many articles of hard pottery, and which, with proper treatment, would afford suitable material for fire-bricks. But the best known clays of this series are the refractory and other clays now being worked by Messrs, Burn and Oo of Ranganj. The |
| 1338 | * *. |
| 1339 | · · · · · · · · · · · · · · · · · · · |
| | |
| 1340 | 7th, Assam and Burma—Rich deposits of porcelain clays have been reported to occur in Upper Assam near the Bhramakhund, known locally as ruthmantytha, and a fine clay for pottery purposes is also said to be found near the base of the cretaceous rocks at the western end of the Garo hills in Burma the ordinary alluvial clay, mixed with sand, affords the material for common pottery, but a dark-coloured seam in the Irawadi valley is much sought after by the potters. Some of the upper beds in the nummulatic group are said to consist of China clay and would answer |
| | C. 1340 |

| Glazing and Colouring Pottery. | CLAY. |
|---|-------|
| well for potters, owing to their freedom from iron. Kaolin is also reported to exist in Tenassecium. Of the clays experimented with by Sir William. O Shaughnessy that from Singapore was said to be the best | |
| VIMATERIALS USED FOR GLAZING OR PAINTING POTTERY IN INDIA. | 1341 |
| The indigenous art of glazing pottery, as practised in India is crude and unsausfactory. Ball says "The variation or imperfect glaze | |

The indigenous art of glazing pottery, as practised in India is crude and unastisfactor, Ball says. "The varish or imperfect glaze used for the sugar-boolers' pans, known in Bengal as kolas, is thus described by Mr. Piddington There are two kinds of earth used, one of which is called belints, it is a solicious and otherous earth, the best being fou!

use, the p

20 miles v

Kulna obtained from one maund of the earth, two varieties of the uporoms are

of lime. The black colour of pottery is often obtained from the smoke of ole-abe thrown into the blan when the hading is complete. At other times an organic warmish mentioned or this purpose, eccept when, as mentioned connection with significant the design of the purpose, eccept when, as mentioned connection with significant to the significant of the end of the purpose, expect when, as the necessary organic matter to cause it to burn black Artificially black area possible in produced at Monghir, Patna, Sarun, Chunan, and Suria In the younger rocks of the Raymahal series certain clays occur called hirr. These are used as priments. According to Buchanan the potters of Raymahal use this khar forging a white surface to pottery made of ordinary clays. Cheap nottery is often painted after having been baked, such as that seen at Kota, Lucknow, Benares, &c., at other times it is posdered with mica, or by other mechanical means has a colour imparted to it. Black pottery is, for example, often etched, and a preparation of tim and mercury rubbed into the patterns in mitiation of mital badn ware. With the exception of these miserable attempts the kumhar

1343

1342

the material is put into a furnace until it melts, when clean-picked shora

| J- 0 | 21111111111) 19 1111 2111111111 |
|-----------------------|---|
| CLEIDION javanicum | |
| 1344 | kalms or saltpetre is stirred in A foam appears in the surface, which is skimmed off and set aside for use." The latter is similarly made of quartrees rock and borax or sinceous sand and soda. "A point is made of firing the furnace in which the kanch is melted with kikar" (Acaca arabica) oudes of the sitka is made be reducing with rinc instead of tin, sikka lal in the same way, oudising the side of the same way, oudising the same way, oudising the same way, outling the same way, |
| | been roasted and powdered, mixed with a little powdered flint." Sir Convert the decrete poster cases of the risk wild or indigo iffinity parts 5, zinc 5, and |
| 1345 | Inc years graze used as the basis of the greens is made of sikka sard, white oxide I seer, and sang safed a white quartrose rock or mill stone, or burnt and powdered fint, 4 chittaks, to which, when fused, I |
| 1346 | chittak of borax is added " "The green colours produced are [1] Zamrud, deep green [1 seer of glaze and 3 chittaks of chiul tamba or calcined copper], [2] \$1.55, full "by small" by small produced are training 1 seer leaving Bird. |
| | wood, in his most interesting account or Indian pottery, after having die reduced to powder, are painted on with gum or gluten. The vessel to receive them is first carefully smoothed over and cleaned, and, as the pottery can be red with white clay and borax and Acaas or Angessas gums called kharya mutis. The powdered colours are ground up with a mitture of usinata, or gluten and water called mana, until the proper consistence is obtained when they are painted on with a brish. The vessels are then carefully dried and baked in a furnace heated with ber (Zizyphus), or, in some cases, Cappars wood. " |
| Z347 | VII -CLAYS OR EARTHS EMPLOYED AS PIGMENTS OR DYES |
| | See "Pigments" for further information as to colouring of pottery |
| } | Clearing Nut, see Strychnos potatorum, Linn, Loganiace |
| | CLEIDION, Blume, Gen Pl, III, 320 |
| 1348 | Cleidion javanicum, Bl., Fl. Br. Ind., V., 444, Euphorblaces. Syn.—Rottiera (parado Dale & Glos Bomb Fl., 20) Vertexors—Care Fr. Fl. Bern. II. 300, Beddom, Fl. Sylv. t. Cletari, Gamble. Man. Timb., 348, Thwaites, Bn. Crylon Fl., 171. Libbos, U. Fl. Bomb, 123 |
| 1 | Lisboa, U Pl Bomb, 123 |

| The Clematis. | EMATIS grata |
|--|--------------------------------------|
| Habitat -An evergreen tree met with in the tropical forests of North- | 1 |
| rather heavy, durable in | TIMBER. 1349 |
| [EUPHORBIACE E. CLEISTANTHUS, Hook f, Gen Pl, III, 268, | |
| Cleistanthus malabaricus, Mall -Arg , Fl Br Ind , V , 276 References — Gamble, Man Timb , 357 Lisbon, U Pl Bomb , 120 Habitat — A small tree found in the Konkan and Malabar districts of South Indu | 1350 |
| Structure of the Wood —Lisboa mentions this plant amongst his useful timbers | TIMBER 1351 |
| C. myrianthus, Kurz, For Fl Burm, II 370, Fl Br Ind, V, 275 Vern — Mo man tha Burst Reference — Gamble Man Timb, 357 | 1352 |
| Habitat —A moderate sized evergreen tree of the tropical forests of Burma and the Andmann Islands Structure of the Wood —Moderately hard, reddish grey Weight 41th per cubic foot | TIMBER. |
| CLEMATIS, Linn, Gen Pl, I, 3 | |
| Clematis barbellata, Edgew, F. Br. Ind., I., 3, RAMUNCULACE.E. Reference—Gomble, Man Timb., I Habitat—A woody climber of the western temperate Himalaya, Garhwal, and Kumaon | 1351 |
| C. Buchananiana, DC, Fl Br Ind, I, 6 References—Aura, For Fl Barm, I, 17 Ganble, Man Timb, I, Role Ill Him Bot, I, 51 Habitat—A large woody climber, occurs throughout the temperate | 1 |
| Himshaya at 6,000 feet C. Gouriana, Roxb, Ft Br Ind, I, 4, Wight, Ic, 1 933 4 References Profit Ft Chic Control Ft Chic | 1356 |
| | 1 |
| Baljanr, Cyclop Habitat—An extensive climber found in the hilly districts from the Western Himalays, rising up to 3 000 feet, to Ceylon and the Western Pennsula | |
| | MEDICINE Leaves. 1357 Stems |
| C. grata, Wall , Fl Br Ind , I , 3 | 1358 |
| Vetn —Ghantiali, biliri, Hina References —Gamble, Van Timb, J., Voigt, Hort Sub Cal, 2, Royle, Ill Ilim Bot. J., 44, 45, 51. Ballour, Cyclop | 1359 |
| 2 8 | ı |

2 B

| ,,, | |
|-------------------------------------|---|
| CLEOME viscosa | Wild Mustard |
| | Habitat -A climber of the sub-tropical and temperate Himálaya a |
| 1360 | Clematis montana, Ham , Fl Br Ind , I , 2 |
| 1 | Vern —Ghantalli, Hino References —Gamble, Man Timb, I Royle, Ill Him Bot 1, 45,5! Habitat —A woody climber of the temperate Himalaya, from the Indus to the Bramaputra ascending to 12,000 feet, always above 8,000 its Sikkim, and in the Khas a Hills, Manupur, above a good feet |
| 1361 | C napaulensis, DC; Fl Br Ind, I, 2 |
| -301 | Vern —Pawanne birri, wandak, PB |
| | References - Stewart, Pb Pl 3 Royle III Him Bot , 23 |
| MEDICINE Leaves 1362 | Habitat — Found in the temperate Himalaya from Garhwal to Bhutan Medicine — In Kanawar the Leaves are said to act deleteriously on the skin |
| r363 | C triloba, Heyne, Il Br Ind I, 3 |
| | Vern - Moravela, mortel, mortel, ranjae, ranjai, Bomb, Moravela, |
| | MAR References — Dalz & Gros Bomb FI, J Dymock, Mat Med W Ind, 2nd Ed 21, S Arjun Bomb Drugs 2 |
| | Habitat -An extensive climber met with in the mountains of the |
| MEDICINE Plant 1364 | |
| FIBRE 1365 Distillate 1366 | |
| | CLEOME, Linn , Gen Pl I, 105, 968 |
| | Cleome pentaphylla, see Gynandropsis pentaphylla, DC, CAPPARIDER |
| 1367 | C. VISCOSA, Linn, Fl Br Ind, I, 170 Wight, Ic, t 2 Sometimes called Wild Mistard |
| | Syn —C ICOSANDRA Linn POLANISIA VISCOSA, DC, P ICOSANDRA, |
| | Ve - v , L - L tta Histo ,) Tannta H Ka fod |
| | jangi hul M. Auka A. Auka I. Auka Ina-b ofdra |
| | References — Revô Fl Ind Ed C B C 501 U C Duit Mai Med Hind 279 Drunck Mat Med W Ind 2nd Fd 01 Airsi V Mai Ind II 221 O Shaughnessy Beng Dispens 201 M Party Pl and Dr 18 Sind 32 Drary, U Pl 351 Bolate Found 19 Dispens 201, Cocke O la and O lateral 37 Attanon, Hins D st 732, E rdaool |

or Hurhur CLEOME VISCOSA.

Bomb Pr, 276 Lisboa, U Pl Bomb, 145, Spons Encylop, 1415
Ballour, Cyclop

Habitat —A common weed throughout the greater part of India, ap pearing in the rainy season, very common in Bengal and South India

Oil—The seeds yield a light olive-green coloured impid oil when subject to a great pressure—It seems likely that this oil would prove serviceable where a very liquid oil is required. The oil could be prepared to any exten

Medicine—The Jurge of the leaves is poured into the car to relieve earache. According to Rheede, it sussful in deafners. Dr. Dymock writes
that the junce mixed with oil is a popular remedy in Bombay for purilent discharges from the ear, whence the Bombay name of the plant
Amphuts. "The LEAVES boiled in glis are applied to recent wounds, and
the junce to ulers" (Druny). In Cochin China the whole plant, brussed,

01L 1368

MEDICINE

Julce 1369 Leaves 1370

Seeds

137I

to relieve ear-ache and as an astringent in cases of atorrhea the ear should be syninged well before its application. 'Brigade Surgeon J H Thornton, Monghyy' "Alterative, useful in secondary sphilis and enlargement of the line and spleen" [Surgeon-Major J McD Houston Travancore, and John Gomes, Eg., Medical Storekeeper, Trevandrum). "The seed made into chutney has strong digestive power (Nathee Doctor Umurgaden, Metlapollum, Madre Doctor Umurgaden, Me

"The seeds of Cleome viscosa are anthelminue, rubefacient, and vesicant, and the leaves subefacient, vestcant, and a self tremedy for a few diseases of the ear. The seeds are valuable in expelling round worms, and uso as a rubefacient and vestcant in all the compluints in which mustard is used. The leaves are also useful in the same way as a local stimulinit, and, in addition to this, the juice possesses a curative influence over some cases of otalga and toortheas, but the smarting it produces in

recording to their age. As a drug the leaves of Cleone viscosa are much superior to those of Gymandrogus pentaphylla. It is the former which possess a distinct feetid smell and efficient rubefacient and vessional properties, and not the latter. The above plants are frequently found growing together and are often confused parly from a general bornia, alsimilarity between them, and partly on secount of their native synonyms being almost the same. The close similarity of their seeds addle greatly to this confusion. There will be, however, no difficult in

CLERODENDRON A Mild Antineriodic merme MEDICINE distinguishing the two plants if due attention is paid to the following botanical characters -'Cleame viscos : - Siliqua flat, striated, pubescent, and sessile or short stalked, flowers yellow, stem and branches quite covered with viscid strongly "As the seeds of both of these plants are very similar, I need not de scribe them separately They are as follows small, flat, and slightly acrid or bitterish in taste. They yield a small quantity of fixed oil on expression LI remedial value' (Honorary Surgeon Moodeen Sheriff, Ahan Bahadur, Triblicine Madris) Food - The SEEDS of Cleome viscosa are much used by the natives, FOOD Seeds chiefly the Brahmins, in their curries, they are sold in all the bazars at a trifling price (Roub) Lisboa says that the PLANT is eaten boiled 1372 Plant with chillies and salt as salad **3373** CLERODENDRON, Linn ; Gen Pl, II, 1155 This name alludes to the variable properties of the species kleros, lot, and dendron, a tree [VERBENACE.E. Clerodendron Colebrookianum, Walp , Fl Br Ind , IV , 594, 1374 Vern - Kadungbi LEPCHA Reference. - Gamble, Man Timb 200 Habitat -An evergreen shrub with eilvery grey bark, met with in Sikkim and the Lhasia Hills, 2 000 to 6 000 feet also in Burma Food - The young LEAVES are eaten by the Lepchas FOOD Structure of the Wood -Grey, soft 1375 TIMBER C. merme, Garin Il Br Ind . IV . 586 1376 Syn -VOLKAMERIA INERMIS LINN 1377 Vern - Sang-kuppi sang k pi la i jai, HIND Bun jumat, bun joi i bon II MAR . m ki fpi, i ka eru Pemlas Reformen

Habitat - 1 large, ramous often scandent evergreen shrub, common in tidal forests in Bengal, Burma, and the Andamans Perfumery - An exquisite perfume is said to be derived from the

flowers of this plant (Presse) Medicine - Dr Dymock says that the PLANT has a reputation as a febrif ige in remittent and intermittent fevers. This fact is supported by Dr Sakharam Arjun, who, upon the authority of Dr Hojel, states that

C. 1379

PERFUMERY 1378

MEDICINE

Plant

1379

A Substitute for Chiretta

CLERODENDRON infortunatum

"the thick succulent leaves are very bitter, and on expression yield a large quantity of thickish somewhat muchaginous juice with a slightly saline but intensely bitter taste. Although not generally known, it has of late been used as a febriling and antiperiodic with marked benefit."

[Wight, Ic , 1 1471 1380

Clerodendron infortunatum, Garin, Fl Br Ind, IV, 594,

Syn - Volkameria infortunata, Roxb, Fl Ind, Ed CBC, 478, G VISCOSUM, Vent

Vern —Bhant bhat Hind, Bhint, glentu Beng, Kharbari, karni or warit Sintil, Kula narsai Koo, Chitu Nedel, Adung, Ledha, Li kunsh, Mechi, Kali basit Pe, Kari Bomi Bhandira, kari Mar, Bockada Tel. Peragu Mala Biandra, bhanti bhi ilaka, Sans, Ka anggyi, buyihyi, khaonin gyi Borni, Jisa janna, Sino

References -Brandis For Fl 363, Kurs For Fl Burm, II, 267,

74 S Arjun Pb Pr., 364, Mal, II, t 25

Habitat—A pinksh-white-flowered shrub, common in waste places throughout the greater part of India and Burma and in the damp forests of Ceylon up to an elevation of Sooo feet. Grows gregariously, forming a dense under vegetation, specially associated with the Bamboo. On passing into fruit the cally's becomes scarlet, and the plant is then even more attractive thrin when covered with its fentildy-scented flowers.

Medicine — Dr Bholanath Bose calls attention to the Leuves of this plant as a cheap and fifteent substitute for clienter as a tonic and antiperiodic." (Phorni Ind.) According to Dr Kanny Lal De, Ol E, the fresh Jours of the leaves is employed by the natives as a vermilige, and also as a bitter tonic and febrilige in malarious feers; especially in those of children Dr Dymock states that he has not seen the leaves to the control of the con MEDICINE. Leaves. 1381

> Juice 1382 Bark 1383

Special Op mons—5: The expressed ture is an excellent livatine, cholagogue and antihelimine. It is used as an injection into the rectum in cases of ascardes. It is also a valuable bitter tone, and the natives believe that st presence cures scales in the locality? (Brigade Surgeon J. H. Thornton B. A., M.B., Monghir). "Is said to be a very useful antipende." (Surgeon Major E. Sanders Chittycopg.) "The jusced of

Decortion.

"Decoction of the leaves is used as an antiperiod c" (Surgion Anund sused as a Officer W "(Surgeon)

Domestic Uses -- Edgeworth mentions that this plant is used in the Ambala district to give fire by friction

DOMESTIC. 1385 CI EBUDENDBON

Seeds 1301

C. 1391

Medicine for Cattle certatum [Ic t 1472 1386 Fl Br Ind IV 500 Clerodendron phlomoides, Linn High \$7.00m 17-m 4 .. . References — Rook Fl Ind Ed CB C 477 Drands For Fl 505 Gamble Ma I mb 205 Thma tes E Crylon Fl 243 Data C Gamble Ma II mb 205 Thma tes E Crylon Fl 243 Data C G Cal 455 Dynack Mat Med W Ind 306 Antie Mat II d 408 M rray Fl and Drugs Snd 114 S Any n Bomb Drugs 04 Royle III Hm Bota y 250 Ballyor Cycles Hab tat -A tall pubescent shrub common in many parts of Ind a or no pally in the dr er regions of the Paniah Sind Maryara the Dekkan Behar Bengal Oudh Central Provinces and also in Ceylon Medicine - Dr Dymock says that the nat yes of Western Ind a sup MEDICINE Post pose the ROOT of the plant has literative properties but le has never 1387 seen it used as such valescence o measles to Ansle considered b plant to the r ca tle to cu e them of darrhoea and yorms or when the stomach s ells Mr Campbell also says the Santals rub the plant over the r bod es in dropsy C serratum, Spreng Fl Br Ind IV 592 Wight Ic 1 1472 1388 V۵ SAUTAL Sharane addatk ra gr or a (root) References — Brand s For Fl 364 Kurs For Fl Burm II 267
Gamble Man T mb 299 Dals & Gbs Bomb Fl 200 A tch son
Cat Pb Pl 12 Vogt Ho t Sub Cal 466 Pharm Ind 164
U 1d le Cat Raw ury U Pl 168 Balfour Hab tat -A blue flo vered shrub common in the Sub H malayan tract MEDICINE Root 1380 h ck re ely Leaves 1390

A Charm against Disease

CLITORIA Ternatea.

Special Opinions - Sightly aperient" (Surgeon H W Hill, Manbhoom) 'Used in infusion (31 to xx) in bronchial affections, and as a

> The v the

FOOD Leaves 1392 Root. 1303 1304

(Wight, Ill , 1 173

Clerodendron Siphonanthus, R Br , Fl Br Ind , IV, 595 , Syn -Siphonanthus indica, Linn , Rorb , Fl Ind , Ed CBC , 481

Medic Bengalis "The Ro tions aethma

GUM 1305 EDICII Wood I397 Confection.

for diseases of the lungs A CONFFCTION called Bhargiguda is prepared with a decoction of this root and the ten drugs called dasamula, chebulic myrobolan, treacle, and the usual aromatic substances. It is used in asthma An OIL, prepared with a decoction and paste of the root in the usual proportions, is recommended for external application in the marasmus of children" (U C Dutt, Mat Med Hend, 219) Mr. Baden Powell writes that the PLANT is slightly bitter and astringent, and that

the resin is employed in syph litic rheumatism

Special Opinion — § The expressed JUICE of the leaves and tender

1398 011. I390 Plant. 1400 Juice 1401

Beads 1402

Mongher)

CLITORIA, Linn , Gen Pl , I , 528

LEGUMINOSA 1403 Clitoria Ternatea, Linn , Fl Br Ind , II , 208 , Bot Mag , 1 1542, Ve--4 4 7 5 5 ** *

| | RI. |
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| | |
| | |
| | te: |
| | |
| | |

A Powerful Cathartic.

I restmingem, algunna, gosarna mui, pan, pininu granti, aspiota, operajia, gobarna mal, nilaghire, kurni, nilaghira, khura, Sans, Masaryunenhudi (Indian Meseron), barulmasar yanehmid (secas), Arab, Darabhte-bike-havat, tukhne bikhehayat (secas), Pres, Bayu, ha mong m, oung mai phys, Bursi, Katlaroda, nil katlaroda, nil-katlarolu, Yila

DYE. Seeds 1404

MEDICINE Root. 1405 Habitat.—A common garden flower, also occurs in every hedge-row all over India The seeds were first taken to England from the Island of Ternate, one of the Moluccas, hence the specific (and former generic) name of the plant.

Dye —Bidie remarks that the SEEDS are said to be used by dyers "The corollas of the blue variety are said to afford a blue die in Cochin China, but it is not permanent; and Rumphius says that they are used for colouring boiled tice in Amboyna" (Treasury of Botany)

Medicine.—The goot is a powerful cathartic like plap, and has been recommended to be used along with other layatives and durettes in ascites and enlargements of the abdominal viscera (Dymoch). Ainsile recommends it in troup as an emetic, but O'Shauenheesy, in Beneal Distense.

Seeds. I406 as a duretic, and in some cases as a layative. The sprps are, however, more useful, and have gained a certain reputation in Europe as a sale medicine, especially for children. The powdered seeds are purgative and aperient. Combined with acid tairtate of potash and ginger, they are administered in the same doses as jalap. The infusion of the LEVESS.

Leaves 1407

ing and to act as an antidote to poisons. The roots are used as emetics and in rheuma — if the roots are used as emetics and in rheuma — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetics are used as emetical and in rheuman — if the roots are used as emetics and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are used as emetical and in rheuman — if the roots are use

Jules 1408

"The juice of in cases of colliquative sweating in hectic tever" (Laylor, Mes. 247. Daces, 33, 53)
Special Opinions. — § "There are two varieties of Clitona Ternatea distinguished by the colour of their flowers, as blue and white, and the blue

C. 1408

orders, also in

Clitoria Seeds-a Medicine used in Croup, &c

CLOVES

again has a sub variety, in which the flowers are double. There is no distinct difference between the action of the seeds of these varieties, or if any at all, it is in favour of the white one. The plants are in flower

MEDICINE.

In this precaution are nearly round or slightly compressed along the edges oblong, dull green, greenish brown, or brown in colour, and minutely mottled. The ends of some seeds are round, and of others flat, as though cut off clean by a kin fe, taste d sagreeable and acrid, and no smell. The thicker and rounder the seeds are, the more active they prove. The immature seeds are flat and dark brown in colour, the matured thick and round seeds are an efficient purgratic and produce five or six motions in one drachm or one drachm and a half doses. Their action the received proportion to the microses of their guarantity up 100. Seeds are one of these controls are the seeds are one of these controls.

seeds are one of those but they may also be

in equal proportion, he compound powder. I he dose of the compound powder is from a drachm and a half to two drachm. That is he saw that the same a drachm and a half to two drachms.

dome childr

It act

doses the sy scald:

gonorrhoad discharge itself is much abated under its use. One small root is generally a dose for children under two years, and one large root or two small ones for those between three and six years. For adults

1409

The roots of the blue species are used as an antidute in cases of snakeblue "(Brigade Sirgeor, P H Thornton, BA, M B, Monghin) "The seeds are used as a mild purgative for children" (Surgeon Major Y white flowers and the st" (Nate * Doctor a drastic purgative rgeon Shib Chindler on dered root of this

1410

Major John North, Bingalore)
Sacred Uses —The flower is held sacred to the goddess Durga
Clover, see Trifolium pratense, Linn, Leguminos.

SACRED USES. 1411

Cloves, see Caryophyllus aromaticus, Linn, MYRTACEE

| | Dictionary of the Economic |
|--------------|---|
| COAL. | Coal |
| | CNICUS, Linn, Gen Pl, II, 468 |
| 1412 | Cnicus arvensis, Hoffm , Il Br Ind , III., 362, Composition |
| | Syn — Carduus Lanatus Roxò , Fl Ind , Ed C B C , 595 Vern — Ehav Daur , N W P Reference — Smuth, Ductonary, 410 |
| OlL Seeds | Habitat B 3 L - L 1 1 Gangetic Oil — The seeds |
| 1413 | them for their own use It burns with smoke, is otherwise of good quality |
| | Cnidium diffusum, see Seseli indicum, W & A , Unbelligere |
| 1414 | COAL, |
| | Charbon de tèrre, Fr., Steinkohlen, Germ., Carboni fos sili, II., Carives de pedra, Port., Carbones de piedra, Sp. |
| | Vern — Köyelah or kuela Hind, Köyala, Beng Kölsa Duk Kars or Simai karri, Tan, Boggu or Sima boggu Tei; Kari, Mai, Iddallu Kan, Koelo, köya Guj Aiguru Cing Fahm, Arae, Zughal, Pers, Angaraha Sans, Misue, midu ye Burm |
| | References—So much has been written regarding Indian Coul that an enumeration of the publications would occupy many pages The reader is referred to Bell's Economic Geology, pp 500 604, to the Memoris Retords of the Geological Survey, and to the Tournals of the America Society of Bengal. The following works may, however, be specially mentioned. |
| | Final Report of the Coal Committee Dr T Oldham's Report on the Coal Resources of India Sel Rec Goot Ind LXIV Ball's Coal fields and Coal productions of India Annual Adminis *ration Reports on Railways in India |
| | REGIONS OF INDIAN COAL |
| | The following account of the coal fields of India has been furnished by Mr H B Medicott for this publication — |
| 1415 | ABSTRACT OF THE FEATURES OF INDIAN COAL |
| | "India possesses extensive stores of coal, though none of it belongs to the so-styled carboniferous period, and in India itself the coal measure rocks are not all of one formation. All the coal of peninsular India occurs in the rocks known as the Gondwana system, the fossil fora of which has a mesozone facies, and all the coal of extra peninsular India occurs in rocks of cretaceous or tertiary age. In both cases the distribution is partial." |
| | and nort nces an North-W |
| | Madras r margin of the Indo-Gangetic plains from Sind to Pegu but it is only in Assam and Upper Burma that valuable measures have been found where a cretaceous coal occurs in workable quant ty |
| | C. 1415 |
| | |

Coal fields of India

(H B Medlicott)

COAL.

'In both regions the quality of the coal varies much as in all coalndard, almost if not

Gondwann (Bengal) some an excess of ntage of ash is low. producing a lighter

The following tabular statement exhibits these facts firel

| | BENGAL | | Assam | |
|---|---------------------------------|------------------------------|----------------------------|-------------------|
| | Average of 31 | Best | Average of 23 | Best |
| Fixed carbon Volatile exclusive of mo sture Mo sture Ash | 53 20 23 93 4 80 16 17 | 66 52 28 12 96 4 40 | 56 5 34 6 5 0 3 9 | 66 1 33 5 4 |
| | 100 | 100 | Ioo | 100 |

In Bengal only the Rangani and Karharbari fields have as yet been largely worked and to a small extent the Daltongan field Several other large coal-fields are still quite untouched, owing to difficulty of communication "In the Central Provinces the Mohpani mines in the Narbada valley,

and the Warora mines in the Wardha valley, have been for some time in work and the Umaria and Sohagpur fields in the Rewah State are being opened up

"In the Singareni and Sasti fields of the Nizam's Territories some preliminary mining has been carried out pending the establishment of railway communication "Vigorous mining enterprise has recently been started in the Makum

coal field in Upper Assam?

MORE DETAILED STATEMENT OF THE COAL-VIELDING DISTRICTS

The mineral is more particularly developed in the central eastern por- SOUTH INDIA tic

1416

fr

he field about 38 miles tent, and contains four is the most southern

36', Long 81°7' Has its the River Godavari, on ons of coal, of which only

eams, neither of which exe Godavari, and another,

"Singarens - The best field as yet known for Madras, but still in the Nizum's Dominions, is that near Singarens, lat 17°30 30", long 80°20'. There are five seams the thickness of one was not ascertained, those of the

[·] Since opened out

| 80 | Dictionary of the Economic |
|-----------------|--|
| COAL | Coal-fields of India. |
| | others are respectively 6, 3, 3, and 34 feet This coal an was found to be slively community theory starter |
| ORISSA | Annuram—Lat. 18 5, Long 80 14 Two seams and 6 feet in thickness respectively The at aliable coal is 1,132,500 tons, its position is, however, unfacourable to its "Tandur—Lat 19'0', Long 79'30' This village is the centre of a strip of Barakar ocks, extending from Kan pali, and contains a 15-foot seam of fair coal "Antergaon—Lat. 19'22,30', Long 79'33'. South of foot seam occurs, 9 inches of which are shale "Satt and Paoni—In the Nizam 5 Dominions, included area, a 50-foot seam occurs here, a considerable portion good quality 30,000,000 tons of coal are estimated to be a this source "Valley" villey |
| 1417 | coalis |
| BENGAL. 1418 | of the Net Hamm Hills, cold measure rocks are expended. less extend over a vasily greater area under the young Separated by these overlying rocks, there are five desired. Hills Chaparbhita, Pachwara, Mohowgurh, and Brahmar continuity of the seams in each of these, while the data a very vague and incomplete. If the coal measures extern to the east, they would be close to the water carraige of and hence transport would be cheap, but on the other han this region is for the most part stony and bad "Heegorh.—In the Janti, Sahajori, and Kandit Karasah different qualities occurs. Some in the Janti field is excell known from the Sahajori area is inferior. "Karharbiri or Krithribali, in the district of Hazat small field, having an area of 8 square miles, is of great in account of its position dabout 200 miles from Calcutta by 1 good quality of its coal. The coaloccurs in three principal an average total thickness of 16 feet, the estimated amot about 136,000,000 tons, while the available, portion is |
| ı | 14 000,000,000 tons The total area exposed is about 500 s but the real area is possibly even double that, as the beds under the alluvium This is the largest and most imports in which coal is worked in India, its proximity to the railway, and to the port of Calcutta, tending to give it pre-ed- |

iswers well for be a serviceable nication is now d. coal report-

of fair coal, o is estimated at development situated about rgura to Aksa

of this place a

in the Wardha of which is of available from

> of the Brahs of an interior

estern margin

d these doubter formations. fields, namely, There is no bout them are nd below the f the Ganges d the coal of

fields, coal of ent, but that

ribagh —This mportance on rail) and the I seams, with unt of coal is estimated at

square miles, p to the east ant coal field main line of minence over other less favourably situated localities. The principal Companies engaged here in the extraction of coal are—the Bengal, Barakar, Equitable, New Birbhoom, and Raniganj Association, besides many minor firms and native associations Many of the seams are of considerable thick-

Coal fields of India (H B Medlicott) COAL.

ness, one containing from 70 to 80 feet of coal As a rule, however, the best coal is not found in the very thick seams

"Gharta or Jeriah —This field is situated in the valley of the Damuda tiver, 16 miles west of the Raing in field, and is nearly all included in the district of Manbhum —The thickness and quality of the seeams vary a

Nothing has been done to develope the resources of this field

"Ramgarh—This field situated to the south of the Bokaro field, has an area of about 40 square miles
The coal is for the most part of poor quality and I mitted in extent

There are probably 5 millio tremity of the field is close to

and it is believed that some

by the natives and carried to Ranchi for sale

"North Karanpura —Situated at the head of the Damuda valley, has an area of about 472 square miles, and the estimated amount of coal is 8,750 million tons
"South Karanpura —Situated to the south-east of the northern field.

has an area of 72 square miles, and the estimated amount of coal is 75 million tons. The assays of some of the coal indicate a high calorific power.

"Chope-Is a small field of less than a square mile in extent Situated on the Hazaribagh plateau

"Ithurs, 25 miles north west of Hazaribagh A few seams of inferior coal are exposed

"Aurunga — In the district of I ohardaga, in the calley of the Koel, a tributary of the Son The area is 97 square miles, and the estimated amount of coal is 20 million tons, but the quality of the coal as taken from the outcrop is poor

tons

"Tatapans, Iria, and Morne—Situsted in the valley of the Son morti-west and tributaries. These fields are persons of a large tractstretching far to FROWINGS. the westward Scieral coal seams of workable thickness and many 14459.

n ones exist

| 382 | Dictionary of the Economic |
|-------------------------------|--|
| COAL. | Coal-fields of India. |
| | , |
| | |
| | "Korar —Three miles north of Umaria The area is 9 square miles, and a thick seam of good coal has been proved "Thintim—Is another area of shout 41 square miles, in which seams of some promise have been observed out 41 square miles, in which seams of some promise have been observed about 400 square miles occupying the chiral basin of Sarguja; it contains some good coal suitable for locomotives." |
| CENTRAL INDIA. 1420 | With the other associated rocks, these occupy an area of at least 1,000 square miles, some of the seams are very thick, two being respectively go and 165 feet, but though including good coal they often contain a large proportion of shale, and the horizontal extension of the seams is sometimes irregular and uncertain. These fields will probably assume |
| CENTRAL PROVINCES, 1421 | importance in connection with the line to connect Calcutta with the Central Provinces. The recent boring experiments show that the Korba area has proved most worthy of consideration, particularly at Ghordewa, 9 miles to west north-west of Korba, where there is a 5-foot seam of good coal, "Satpura Basin " 5 at N 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 |
| HYDERABAD. 1422 | e of which are of ear the village of District, contains 38 feet. other areas, Sasti 1 to evist. There |
| вомелу. 1423 | Warora basin |

| Coal-fields of India. | (H B Medlicott) | COAL |
|-----------------------|-----------------|--------|
| | i | 613.70 |
| | | :.: |
| | | ٠, |

purposes The latest reports give a 6 foot seam of coal near Kosht, but the dip is said to be as high as 45° which will militate greatly against its profitable extraction

"Chamarling, in the Luni Pathan country, about 75 miles from Dera Ghazi Khan -There are several seams of tertiary coal, of which the principal one has a thickness of q inches

"Kanigaram, in the " ลใ exists near this place, e uг in the Ghilzai country a at 1 - 4 11

containing coal

PANJAR 1426

in places. As the locality is near a good road a fair amount of fuel might be obtained, for La-

Bhaganwalla, the ou 2 miles, the coal is

By means of suitab!

tained, and though t

in this respect. The available coal is estimated at 16,20 000 maunds (60,000 tons) " North-West Himalayas -At Dandli, near Kotli, on the Punch, and HIMALAYAN.

at the north-west shoulder of the Singar Marg Mountain, there are

| 382 | Dictionary of the Economic | |
|------------------------------|--|--|
| COAL. | Coal-fields of India | _ |
| | affin The Ett - | |
| | 28 m Il on tone of coal e of great manager a coal in a supply of supply of | East |
| | and a thick seam of good coal has been proved "Thilmili—Is another area of about 41 square miles, in which se of some promise have been observed "Bisrampur—Has an area of about 400 square miles occupying central basin of Sargupa, it contains some good coal suitable for loce | ams the |
| CENTRAL INDIA I420 | tives "Lakhanpur—South of the Bisrampur area, holds some seams of g coal, the area is 50 square miles "Raiganh, Hinger, Udatpur and Korba fields in the Mahanadi valle With the other associated rocks, these occupy an area of at least i square miles, some of the seams are very thick, two being even of and 168 feet, but though including good and the seams are seamed extension of the seam sometimes irregular and uncertain. These fields will probably ass importance in connection with the line to connect Calcutta with Central Provinces The recent boring experiments show that the Ke area has proved most worthy of consideration, particularly at Ghord of miles to west north west of Korba, where there is a 5 foot seam of g | y ood y,000 vely n a is is ume the orba |
| CENTRAL PROVINCES 1421 | "Satpura Basin south of the Narbada Valley—The Mohpam fiel of importance in consequence of its position with reference to the Gindan Pennsula Railway (95 miles by rail, west south west from Jal pur). The coal is worked by the Narbada Coal Company and supply to the railway, but the supply falls short of its requirements. "Shahpur (or Betul) on the south of the Tana valley—This is compared to the coal of the Tana valley. | pal- hed ield |
| HYDERABAD 1422 | the willing Chimur, 30 miles north east of Warora in the Chanda District, continues a continues of coal, with a maximum total thickness of 38 feet "Wardha (or Chanda), 87 — Includes, with several other weas, 5 and Paont in Hyderabad in which coal has been proved to crist are about 1714 million tons of coal as alable, 412 — Warora bas a Chingus 144 Chingus 155 — Warora bas a Chingus 155 — Warora b | eins esti |
| eombay 1423 | Bet ven Janara and Ch chol 75 Sast and Paon (Nuzam stert tory) 30) The only pits worked in this wide area are at Warora whence a speciment by the conveys the coal to the Nagpur branch of the Great Ind Pennsula Raiway "Guthe There are a few thin shaly seams at Trambal (Tron or Trombow), about 5 miles north east of Buj in a stream north Six agad and in a stream west of Guneri near Cakhpat Besides the jurassic seams there are some tertuary carbonaceous layers of no prom | of esc |

Coal-fields of India. (H B Nidlicott) COAL

purposes The latest reports give a 6 foot seam of coal near Kosht, but the dip is said to be as high as 45° which will militate greatly against its profitable extraction

"Chamarlang, in the Lum Pathan country, about 75 miles from Dera Ghiai Khan—There are several seams of tertiary coal, of which the principal one has a thickness of o inches

1

containing coal

"At alum sha bed of 10

d of 1u "Salt

Sunglewar, Chamii Kutta, Sowa Khan, Deiwai, Nuipur (Niawaii), anu Karuli, but only in small quantities, presenting no prospect of being profit ably wrked At Dandoi, in the neighbouhood of which coal is seen at three localities, and where linkest is 2 feet 6 inches I he later develop-

PANJAB. 1426

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can be delivered At Pid there is a seam of good bright fuel 3 feet thick in places. As the locality is near a good road a fair amount of fuel

(60,000 tons)

"North West Himal yas - At Dandh, near Koth, on the Punch, and HIMALAYAN. at the north west shoulder of the Sungar Marg Mountain, there are 1427

north west shoulder of the Sangar Marg Mountain, there are

| , | Dictionary by the Debugine | | | | | | | | | | | | |
|------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| COAL. | Coal-fields of India. | | | | | | | | | | | | |
| | 27 m2 m3 m3 1 1 1 1 | | | | | | | | | | | | |
| | its collinar u n on the East supply of the | | | | | | | | | | | | |
| 1 |) square miles, | | | | | | | | | | | | |
| | and a thick seam of good coal has been proved. "Jhilmili—Is another area of about 41 square miles, in which seams of some promise have been observed. "Birampur—Has an area of about 400 square miles occupying the | | | | | | | | | | | | |
| | central basin of Sarguja, it contains some good coal suitable for locomo- | | | | | | | | | | | | |
| | "Lakhanpur—South of the Bisrampur area, holds some seams of good coal, the area is 50 square miles | | | | | | | | | | | | |
| CENTRAL INDIA. 1420 | "Ratgarh, Hinger, Udaspur and Korba fields in the Mahanadi valley- With the other associated rocks, these occupy an area of at least 1,000 square miles, some of the seams are very thick, two being respectively op and 168 feet, but though including good coal they often contain a large proportion of shale, and the horizontal extension of the seams sometimes irregular and uncertain. These fields will probably assume importance in connection with the line to connect Calcutta with the Central Provinces. The recent boring experiments show that the Korba area has proved most worthy of consideration, particularly at Ghordewa, 9 miles to west-north-west of Korba, where there is a 5 foot seam of good | | | | | | | | | | | | |
| CENTRAL PROVINCES 1421 | coal, "Satpura Basin, south of the Narbada Valley — The Makpani field is of importance in consequence of its position with reference to the Great Indian Pennsula Railway (95 miles by rail, west-south-west from Jaba- pur). The coal is worked by the Narbada Coal Company and supplied | | | | | | | | | | | | |
| | "Shahpur (or Betul) on the south of the Tawa valley -This field | | | | | | | | | | | | |
| HYDERABAD. 1422 | the village of Chimur, 30 miles north-east of Warora in the Chanda District, contains three seams of coal, with a maximum total thickness of 38 feet. "Wardha for Chanda, 98 — Includes, with several other areas, Satu and Paon in Hyderabrd, in which coal has been proved to cust There are about 1,714 million tons of coal available, 918 — | | | | | | | | | | | | |
| | Warora basin 14 Chugus 45 Win 1,500 m Hion tons Between Wun and Papur 50 Between Janara and Chichols 57 Sasts and Paose (Nazura sterntory) 10 10 10 11 14 15 15 15 15 15 15 15 16 16 17 16 17 16 17 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18 | | | | | | | | | | | | |
| | The only pits worked in this wide area are at Warora, whence a special branch line conveys the coal to the Nagpur branch of the Great Indian | | | | | | | | | | | | |
| BOMBAY. 1423 | "Cutch —There are a few thin shaly seams at Trambal (Ironos) or Trombow), about 5 miles north-east of Buj, in a stream north of Sis-agad, and in a stream west of Cuneri near Lakhpat Besides these jurassic seams, there are some tertiary carbonaceous layers of no promise | | | | | | | | | | | | |
| | C 1400 | | | | | | | | | | | | |

| Coal and Coal-mining in India. (W. Saise) | COAL. |
|--|------------------|
| abandoned This seam was if feet 84 inches thick, of which 6 feet 8 inches were true coal At Hienlap (or Hienlat), about 6 miles from the last locality, there us a serin from 17 to 18 feet in hickness, and the coal is of pretty uniform character with concloudal fracture. Three | |
| | |
| vestern banks utherly is 10 the seam is | |
| • | |
| | |
| far | andaman. 1430 |
| Part !/!) INDIAN MINES. | 1431 |
| De Walter Sa'te Manager P. I.D. Comman 2- Cell - 1 , -11 | 1 |
| | |
| Indian coal up to present date | l |
| INDIAN CONSTRUCTION OR COL. (ITTL1-2-) either imp of coal a first, the under | ' 1432 l |
| Imported (1883-84) Tons. 678,000 Raised in India (1884) about 1,556,400 7,716,000 | |
| "The value of the former is stated to be R1,00,06,047. The value of the latter at the pit's mouth may be taken at R35,45,000. The imported taken at 1,200,000 taken at 1,200,000. | |
| allowed to go to wa steam and rubble * See page 353, | |
| 2 C. 1432 | : |

COAL.

to Dalingkote, the coal is of Gondwana age and is much crushed, some

| assam, 1428 | of it is in the form of a powder, and has assumed the character of graphite |
|----------------|--|
| | and the state of t |
| | |
| | (ant) 164 (470,000 evist a and St |
| вияма, х429 | of access "Upper Assam —There is an important field at Makum which is being worked by the Assam Trading Company, it contains several seams of coal, one of which is over 100 feet thick, 75 feet being good coal. The beds are disturbed and the coal seams lea at an average angle of about 40°, so that some difficulty may be met with in working them An approximate estimate gives 18 00,000 tons as available, supposing the workings to be nowhere carried more than 200 yards from the face of 400 feet to the deep. "The provided by the coal available, this is excussive of what may be proved by borings, but is mostly of poor quality." "Nasira, in Upper Assam—Some of the seams in this field are of considerable thickness, 30 feet and over, the estimated quantity available is 10,000 000 tons. "Janja and Dista —I'wo small and unimportant fields in Upper Assam." "Janja and Dista —I'wo small and unimportant fields in Upper Assam." "Janja and Dista —I'wo small and unimportant fields in Upper Assam." "Janja and Dista —I'wo small and unimportant fields in the Cheduba Land." "Pegu —Coal was discovered in 1855, and a mine opened at Thyetmyo, but after a few cuts had been extracted, the work was abandoned on acce recently and in a fallacious opes of a source of start, have usen niet with a nice of the coal available |
| | |

Coal and Coal musing in India

(IV Suse)

On the Paulwing

LAGO

abandoned This seam was it feet 8t inches thick, of which 6 feet 8 inches were true coal At Hierlap for Hierlah about 6 miles from the last locality, there is a serim from 17 to 18 feet in thickness, and the coal is of pretty uniform character with conchoidal fracture. Three

taceous coal it is well stuated for transit purposes. On the

ANDAMAN 1430

In the Andaman and N cobar Islands coal is known to exist, but so far as they have been examined there are no grounds for belief that a valuable deposit of coal occurs (See Manual of the Geology of India, Part III)

1431

1432

INDIAN MINES

Dr Walter Sause Manager, E. 1 R. Company's Collieries, has obligingly furn shed the following note on Coal and Coal mining in Ind. a which, it may here be remarked, is based on the results of 1883 &1 but on returns some of which are not access ble to Government. This explanation accounts for the apparent discrepancies between the returns of production and consumption published by Government for that year and the figures here given by Dr. Sause. On a further page will be found more recent figures abstracted from Government returns which bring this brief note on Ind an coal up to present date.

INDIAN CONSUMPTION OF COAL—' The coal and coke used in Ind a are e ther imported or raised and made in the country. The foreign sources of coal and coke supply are Europe, Austraha and Africa. Tak ng coal first, the proportion of coal raised in the country and that imported is as under—

Imported (1883 84) Raised in India (1884) about Tons, 678 000 1 556 400

2,216 000

The value of the former is stated to be R1 09.96 047 _The value of

COAL Coal and Coal-mining in India
to a smaller extent. The small kinds of rubble or smithy are used in

1433

"Below is a table of ultimate analyses of specimens from Karharbari and Raniganj coal-fields with analysis of English and Welsh coals for comparison —

| COAL FIELD | Carbon | Hydrogen | Oxygen and Nitrogen | Sulphur | Ash | |
|--|-------------------------|----------------------|---------------------------|----------------------|------------------------|--------------------------|
| Karharbari . E I Railway Ranganj (N. B Coal) Co) | 78 20 70 93 74 31 | 4 34 4 10 5 12 | 7 89 12 49 9 67 | 0 42 0 52 0 47 | 9 15 11 96 10 43 | Main Seara Upper Seam |
| England {Newcastle South Wales | 82 83 88 47 | 5 32 4 59 | 7 13 3 02 | 1 17 1 25 | 3 55 3 69 | |

"It will be noticed that in several particulars Indian coal is inferior to English, 1st, in containing more ash, and 2nd, less carbon and hydrogen

"In the table below the commercial analyses of many Indian coals b I the writer and Mr T H Ward, F G S, are given, as also commercial analyses of Newcastle and Welsh coals, for comparison—

| | | | | | | | |
|-----------------------------------|--------------|--------------|----------------|-----------------|--------------|--|--------------------------|
| Coal-fifld | Spec gravity | Ash | Fixed carbon | Volatile matter | Sulphur | Heating power by Thomson's caforimeter | Remarks. |
| Karhar Tindaria Central (1835) | | ı | | . 1 | | 13 20 12 50 12 89 13 89 12 35 12 40 | Not worked Not worked |
| Welsh Newcastle | 1 312 | 3 68 3 49 | 82 66 63 25 | 13 66 33 26 | 1 59 1 07 | | |

"The above table shows that there is great diversity in the chemistry of the coals of India, and the variations in physical features are just as marked With the exception of Tindaria and Assam coal, all Indian coals are remarkably laminated in structure, the laminæ consisting of a dark highly

1434

| (| Coal | and | Coal mining in India | (W. Saise) | COAL |
|-------|------|-----|----------------------|------------|------|
| | | | | | |
| | | | | | ì |

carbonaceous shale, a bright pitch looking matter, and a mineral charcoal -a very dull charcoal looking substance. When these lam not are very

volat le matter

COMPARISON OF INDIAN WITH IMPORTED COAL FOR RAILWAY PUR FORES — The Ind an and imported coals have been tried on Indian Rail ways with the following results —

EAST INDIAN RAILWAY

| COAL | Gross we ght of trains | Ib per m le of coal consumed | In per ton m le |
|---|--|---|--|
| Ka hatban Ran ganj Sanctor a Equ table O d nary North Wales South Wales Ca d ff New South Wales | Tons cwts 207 19 212 17 208 1 204 14 215 9 203 11 207 14 | 30 12 32 21 33 65 36 98 31 90 32 64 31 42 | 145 151 161 181 143 160 |

D W CAMPBELL

Locomotive Supdt , East Indian Railway

| CONL | Gross we ght of tra ns | D per m le of coal consumed | In per ton m le |
|---|---|--|---------------------------------|
| Ka ha barr Ran gaon Barakar I otherg lis (S. W.) North Wales Austella eld Merthyr Godavar | Tons cwts 166 12 181 7 170 3 183 12 174 9 180 4 | 25 76 33 33 30 04 30 45 27 12 27 43 | 155 184 177 165 156 |

F H TREVETHICK, Locomotive Supdt, Madras Railway COAL. Coal and Coal-mining in India.

"It will be seen from these results that Karharbarı coal 18 a good steam coal, little inferior to imported coals, and that the other Indian coals (except Godavarı) are of fair quality Umara coal, tred on the Great Indian Peninsula, gave 42 63b per train mile with a gross load of 410 tons. This is nearly but not quite as road as Karbarbarı coal.

INDIAN PRODUCTION —"The sources of Indian coal supply and the estimated yearly output are as under:—

| _ | _ | | (Warora | | | | 100,000 |
|---------|-----|-------|--------------------|---|---|---|---------|
| CENTRAL | Pag | DAINC | es { Narbada | | | | 28,000 |
| | | | Umaria | | | | 7,290 |
| BENGAL | | | Skarharbarı | | | | 520,000 |
| | • | • | · {Ranıganı | | | | 890,000 |
| Assam | | | | | | | 50,000 |
| rioann. | | • | • • | • | • | • | 50, |

As the newer fields develop this estimate will have to be increased

DISTRIBUTION OF INDIAN SUPPLY —"The Warora coal-field is connected with the Nagpur branch of the Great Indian Pennisula by the Wardha Coal State Railway, the Mohpan (Narbada) coal-field by a branch from Gadawara with the Great Indian Pennisular The Umaria coal-field has been tapped by the new line from Kuttn through the East Indian Railwas, Jubbulpur line The Assam coal field is connected

the fol-Wardha

"The Bengal coal finds us way to the Panjóp rallways and the railways of Bengal, as also rote the manufactories of Cakutta and the large cutres along the line of railway. Some is used in the steam ship lines Small coal is largely employed for brick making. Comparatively little is utilized for domestic purposes. The Colliery Companies should endeavour to create a want by teaching the people how to use small coal large towns, such as Allahabad instead of wood and cowdung. Agencies the those in English cities could probably do this in a few years, and the

large waste of small coal that goes on at present would thus be obviated MINING IN INDIA.

"Has made considerable progress during the past few years, machinery and well-appointed heapsteads and pit frames are coming generally

into use

which is 402 feet deep

which is 402 feet deep
"The system of working varies very much At Warora, Central Provinces, where 100,000 tons per annum is wound by direct acting engines
out of two shifts 200 feet deep, the system most nearly approaches the

 It may be noted that it is the marketable coal that appears in the Government returns, not the actual amounts raised in 1853-54 these were 1,200,937 tons Conf. with p 359 - Ed

C. 1435

1435

1436

Coal and Coal-mining in India

(IV Suse)

English "day morn

shifts of 81 thus Gai

in height, leaving the roof coal, and pillars 40 feet square. The coal is so hard, it has to be nicked and undercut and then blasted down. The pillars are worked by splitting each from one headway to another and then taking the far end off in slices. The roof coal comes with it

"At the Mohpani collieries a similar system is worked. The difficulties met with in these mines, owing to the faulted and disturbed nature of strata, are probably unequalled in India.

Karharbirs coal-field -" Is the smallest field in Bengal It is mainly worked by three Compan

gal Coal Company, and t

nected with the main line worked by locomotives

a scene of great activity. As much as 50,000 tons of coal and coke have been raised and despatched in one month. The coal field is connected with the East Indian Railway. Chord line by a branch from Madhupur to Girdit, the terminus or collery station. In mechanical arrangements for raising coal, this coal field is well advanced. The old fashioned gin is almost obsolete and bullock-carts have thitle to do

"The system here is similar to that obtaining all over Bengal The

and make are now universal, the crowbar and single pick having been oussed. The workings are on the bord and pillar system. Pillars vary from 12 feet to 40 feet square and 40 feet X60 feet. In the shallow mines and thin scams (7 to 8 feet) the former size obtains, in the thick seams (from 12 to 20 feet thick) the litter. Pillars are worked in the 8 feet seam in the following manner. A 4 feet chock is placed between each pillar in the row of pillars (generally six in number) that are to come out. A chock is also placed in front of each pillar. The pillar is then attacked from the front side. When pillars are taken out the chocks are withdrawn and the roof falls.

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the Bauris are not in such requisition as formerly

"Drainage is effectively curried out by Tangye's special and lifting and forcing pumps, worked by bob levers from horizontal engines. The machinery is of good type, and winding and hauling are done by good engines

"Ventilation is attended to in the deep mines, mainly by furnaces or steam jets

| 390 | Dictionary of the Economic | | | | | | | |
|-------|--|--|--|--|--|--|--|--|
| COAL. | Coal and coal-mining in India, | | | | | | | |
| | "The miners live in small villages, aggregations of huts of mud walls of bricks set in mud with thatched or tiled roof. The huts consist of one room, sometimes two, of from 6'x6' to 10'x 10' in size. Those better off have cowsheds and granares, these two latter with the dwelling forming three sides of a quadrangle. The larger proportion of the labourers cultivate during the rainy season and work at the collieries only in the cold and hot season, say from October to June. Some of the labourers have | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 1437 | tons per annum being me outliers. "The following notes on the Ranganj coal-field are by Mr T. H. Ward— """ "" "" "" "" "" "" "" "" | | | | | | | |
| | which they sang as they tramp round and round "The sinking in the district is easy, through sound sandstones, no brickwork being required to protect the sides. Heavy water is sometimes met with "The coal in the east of the field is very strong and non-caking. The sandstone roof is also very strong and comes right down into the coal Practically no timber is required in working the coal in the manner described below. In the west of the field at Sanktona, for instance, the coal From Beltone, and the same strong the same strong of the Barabean transfer of the Barabean transfer of the Barabean transfer of the same t | | | | | | | |
| | district. without re the variou with refere | | | | | | | |

Coal and Coal-minute in India-

COAL. (IV. Saise)

consideratio -feet to 16 the roof, r

. J .. . f n L. -L. of the seam 12 izes to support ne native coolie field) on com-

insists (and mencing o

until the full height of the seam has been excavated. His chief and dearly-prized weapon is a 'sabal' or crowbar with a sharp point at one end. With this he smashes the coal, standing always when at work. He never grooves beyond the first 'cleat,' gangs of 4 or 5 men occupy each gallery; they are paid b

tom caste (...

ployed

tram or bucket. The women often take their babes, 2 and 3 months old, down the mine, taking with them also a small cot on which the child sleeps or plays while its parents are at work

coal get 'won' being from much less depths Some fire damp has been met with in the western part of the district Chanch colliery (west of the Barakar) belonging to the Bengal Coal Company was abandoned re burnt, some ral Coal Com-

idy been men-

the outcrops merely, of these magnificent seams, and thousands of tons remain still to be worked without in and another and the

" The 'Baury' is t the district In some

amusing like those of drunk, especially at wee on Mondays For the a difficult matter to per

(contract) rate for his

do more than will, with his wife's contribution, keep the household 'in rice' and himself in drink for the day. The nearly universal and very had custom in this district is to pay each evening for the work done during the day. The collier or cooly has often to wait about until 8 or

COAT Trade in Cost. a portion of wick. Any oil he can save from his 'allowance' is his

. The ignorant native has not yet recognised that his health and longevity is in question, and he has besides helped much to prevent ventilation becoming a necessity by the wonderful power of endurance he has shown This power of endurance enables him to work for hours at the bottom of a sinking shaft with water pouring over his naked body or to work all

1438

India employs about 30,000 persons, the quantity of coal raised per annum per person employed, surface and underground, being 51 tons-

"In Europe the numbers are different, varying with the thickness of seams and nature of difficulties met with

England (average) . 348 tons per person employed underground and surface per annum.

Belgum Ditto Ditto.

Saarbruckin 187 Ditto Ditto There is no Government regulation of the coal industry; any person can

manage a mine on any system he likes, whether or not he has experience or training Interest has a great deal with the appointment of the managing staff, and it is to be feared that the best is not made of the splendid coal deposits, the fayourable roof, and the moderate depths and inclinations of the seams"

TRADE IN COAL.

The following brief note, prepared by the Revenue and Agricultural

1430

COAL. Patent Fuel Wood VEAD Coke English Country Tons Tons Tons Tons. Tons 292,808 -9,564 30.020 212,520 479,210 1886 26,212 259,513 9,132 240 053 460.048 255,178 1884 225 721 475,277 23,117 10.439

Trade in Coal-

COAT...

however, 37 were n Umeria in Rewa ially worked The

| Tons | I sky coc | Central Provinces | I sky coc | Central Provinces | I sky coc | Central India | Total | I sky coc | Central India | C

Assam has since increased its output, the figures for 1886-87 being returned at 72,000 tons. It is stated in the Railway Administration Report for 1886-87 that—

"Coal continues to enjoy the confidence of the public. Its sale to the nyer steamers and tea factorie

for by the Dacca State Ra Iway, the Eastern Bengal State Railw It is being largely enquired for b Calcutta, also by the Eastern I

been found suitable to the engines and the Northern Bengal State Ra iway, but the chimany of access to these two railways from the river Brahmaputra prevents its extensive use by their administrations. The coal continues dusty, though it is being mined deep in the hill sides. But its nature is beginning to be understood, and its frability is not found to be a drawback to its use as

a steam fuel

"The coke is found to be saleable to the tea factories of Lakhimpur to
an extent of about 3 000 tons per annum The Company is preparing by
means of an increased labour force to enlarge the output of coal to 100,000

tons yearly" Colleries have recently been opened out at Dandot (Panyáb) and Singarem (Nizam's Territory) The coal in these mines has been pronounced of good quality, and in Upper Burma coal has been found in the Kali Valley on the Chindsin Riverly, but arrangements have not as

The commencement of this industry appears to date back to tace, when a mine was opened in the Ranganj district in Bengal. For twenty years no new mine seems to have been opened, and then only three mines were opened down to 1854. In that year the commencement of the East Ind an Railway line which was laid to run through the coal bearing tree one of the Dand do her.

In the paragraph above the number of mines in 1886-87 is stated to

| | | _ | | | | | | |
|---------------------------|---|---------------------------|--|--|--|--|--|--|
| COAL | Trade in Coal | | | | | | | |
| | doubled themselves since 1866-67, having risen from \$11 000 tons, valued R55 lakhs, in that year to 76, 000 tons valued at \$150 lakhs in 1886 in The United Kingdom supplies nearly all the imported cost, thou Australia, which ranks next to it as a source of supply, is now shar more largely in the imports, the value of its consignments in 1856 being \$1.50 to \$1.5 | | | | | | | |
| - 1 | Bomb I Bomb I Bombay will be to server from the Indian coal fields | ի Ե | | | | | | |
| } | Bengal 95 take advantage of them The percentage to Sad 42 by each province in these imports is noted on | iker | | | | | | |
| INTERNAL TRADE 1441 | INTERNAL TRADE—Statistics may now be given regarding the internovements of coal by rail during 1886-87 between the different blo (reprovinces cheftowns and Native States). The total trade amount providing the providing of coal-pock as a net exporting or importing center may be thus deated— | ited tion | | | | | | |
| , | Exports, Tons Imports Tons | | | | | | | |
| | Bengal 743 000 Calcutta 504 000 Bombay Town 162 000 Bombay Pres dency 167 000 | | | | | | | |
| | Central Provinces 44 000 North Western Pro- harachi 7 000 vinces and Oudh 161,000 | | | | | | | |
| | Assam 4 000 Rajputana and Cen 4 66 000 Madras 1000 Berar 2 000 Final Ind a 35 000 Punjah Berar 2 2 000 S ad 5 000 Mysore 4 000 | | | | | | | |
| | As might be expected, Bengal, where the most extensive mines Ind a are situated takes the lead among the export ng centres. Of | ın ıts | | | | | | |
| 1 | | | | | | | | |
| | , | | | | | | | |
| | M) sore from Madras and the Nizim's Ferritory from Bombay Town. The development of the coal industry in India is indicated by the fathat the gross exports from Bengal to other provinces and Calcutta has increased from 611807 tons in 1882-83 to 755 831 tons in 1885-83 and those from the Central Provinces from 26151 tons to 56,125 tons in 1885-83 and the same period. Assam for the first time shows a net export (4,00 tons) in reterring to which the Director of Land Records and Agractic writes — 'I'll is is entirely due to the increased output of the Makur coal times herr. Dibrugath, which now supply nearly all the coal used it the Assam Valley besides farmishing large quantities for export. | od og oo re m | | | | | | |

1442

Coke (A note contributed by Dr W Saise)

Coke is imported and also made in Ind a In 1893 84 the imports
amounted to 16 700 tons valued at R4 to 738 Coke, however, is now
made to a very large extent in Bengal

It is a most important industry in

| Cobalt | COBALT |
|--|--------|
| its relation to coal raisings as the manufacture of coke means the utiliza- tion of small and otherwise useless coal. The industry is of recent and very rapid growth having increased fourfold since 1875. There are two kinds of coke called respectively hard and soft. The former is dense and is | |
| less expend ture of coal Soft coke is incompletely burnt coal, made for the pictoria. charc excep Ind a shew that in a year about 55 000 tons of coke exclusive of foreign coke are led over the line, add to this the rown consumpt on, the respect | 1443 |
| Hard coke for foundry blast furnaces locomot ve, &c 65,800 Solt coke 1300 per annum The 6 1 200 per annum The 6 1 200 plant of great plant of washing of the market collecties | |
| COBALT | 1444 |
| Cobalt; Ball, Econ Geol, 324 & 616, also Mallet, Mineralogy, 27 Cobalt metal is never met with in the native form, except in small proportions as a constituent of — chiefly in prim tive rocks and ta neckel from and often b sulphur or by assence or by Spess Cobaltor in white Co Linux te or Cobalt Pyrites Co S+Co, S. | |
| Source — A complex mneral (sekta) is found in various mess in Rajputana especially in those of Babu and Bagor near Khetr. Mr Malet says of this substance that it has the specific gravity of 600 On ana lysis it yielded the following composition 19 46 Andrew Arsan Constant 19 46 Andrew Andrew Arsan Constant 19 46 Andrew Arsan Constant 19 46 Andrew Andrew Arsan Constant 19 46 Andrew Arsan Const | 1445 |

305

COBALT. Source of Cobalt.

This substance is generally known as Cobaliste. In the Rightions of Garetier, and the Fury Reports of the Eshibition of 1862, occur accounts of the Jevpur enamels, but in a recent publication, Dr. T. H. Hendley (Fournal of Indian Art), gives root precise details. Sir George Burdwood in his Irdustral Arts of India) under Enamels (pages 165—165) and also under Pottery (pages 301—324), gives root instructive particular particula

scribed Cobalitie, in the Records of the Geological Department, seen to be unarimous in their op non that Cobal' is only rarely met with in India, and that, too, in the innes of Rapputana alone; is far as primitual India is concerned), and that the ox de is artificially prepared; in other words, that it does not occur naturally in Central and Southern Irdia.

1446

will be found some account of the uses of cobalt in the ceramic industry while

ces-

Dr

Hendley says that the colours used by the Jeypore enamellers "are obtained in opaque's treosi masses from Lahore, where they are prepared by Muhammadan manihars or bracelet makers. The Jeypore workmen statethat they cannot make the colours themselves. The base of each colour is vitreous and the colouring matter is the oxide of a metal such as cobalt or from Large quantities of cobalt are obtained from Bharove, nor Rheim, the chi of four of a tribulary Stare of Jeypora, and are often in producing the beautiful blue ename! In these passing prepare there own material for the blue colour, though unable to prepare the orcolours, or whether the entire raise of the crude materials sconveyed Lahore and other centres to be prepared and returned in its manufac-

cusses the Múltán enamel industry and furmishes particulars regard; the Hiras blar vitrous enamel. In the Hills Garetter (f. 10) this subject is enlarged upon, and reference is also made to the Bahdwalpur enamels, where, in addition to opaques, a semi-translucert sea green and also a dark blue are produced.

COCCULUS villosus.

In Europe Cobalt is largely used as a pigment and to colour ordinary glass

Coccuma indica. W. &A. see Cenhalandra indica. Nand . Cucurbitacex.

COCCULUS, DC . Gen Pl . I . v6. a61

1447

F PERMACUA: Cocculus cordifolius, DC. see Tinospora cordifolia, Miers. Menis-

C. indicus (see Fluck and Hanb, Pharm, p 31), a commercial syno nym for Anamyta Cocculus, W & A., see Vol. I., A. 1037.

C. Lezeba, DC . Fl Br Ind . I . 102

1448

Vern - Leller aller hiller, bermatts vehre, PR . Uller hiller SIND References - Gamble Man Timb, 11 Brands, For Fl o Stewart, Pb Pl 6 Attchison, Cat Pb and Sind Pl, 3, Murray, Pl and Drugs, Sind 39

Habitat -A large climber of the dry and and zones, especially of Western India the Paniab, Sind, and the Carnatic

MEDICINE 1440

Medicine -Stewart says the stems often become as much as 3 or a feet in with It is used in Sind and Afghanistan in the treatment of intermittent fevers and as a substitute for Cocculus indicus (Murray Dyntock)

Food and Fodder -In the Trans Indus. Stewart says, it is browsed by goats but by no other animals Said to be used as a partial substitute for hops in the manufacture of Indian beer (Murray)

FOOD and 1450 Hop Substitute.

C. palmatus, DC, see tateorhiza palmata, Mierr

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C, villosus, DC, Fl Br Ind, I, tor.

1451 1452

Vern - Jamit ki bel, hier, dier, Hind , Kursan, samir, Sind , Vasana wela, Max , Wassanwel parael, Bons , Kaituk kodi, Tam , Dusari tipe chipuru tige, kaiterige, Tel. In the Concan the Vaids give this plant the Sans name of Vanatikitia. -- ---

by the leaves of Cocculus villosus

References - Gamble, Man Timb , 11 Roxb , Fl Ind , Ed C B C , 732 . (under Memspermum hursutum, Willd), Drury, U PI, 145, Dymock, Mat Med W Ind, 2nd Ed, 32

Habitat -A large climber of the dry and and zones, Sind, Paniáb. Deccan, extending into Madras and Bengal

Bradena HTL

MEDICINE. Leaves 1453

rheumatic and old venereal pains, half a pint every morning is the dose. It is reckoned heating, laxative, and sudorific." By more recent writers the root is said to be alterative and to be a good substitute for sarsapatilla. Dymock remarks that in the Concan the roots rubbed with Bonduc nuts in water are administered as a cure for belly-ache in childRoots. **1454**

| COCCUS Cacti. The Cochineal Insect. The Cochineal Insect. The Cochineal Insect. The Samuel of Lamber of Lamber, and remarks that it is employed in pains of the head Food.—The leaves are made into curry and eaten by patients under treatment, with the roots or the jelly from the leaves. If suffered to stand for a few minutes, the jelly clears, "the gelatinous or muclaginous parts separate, contract and float in the centre, leaving the water clear of the separate, contract and float in the centre, leaving the water clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the separate clear of the contract and lamber for the separate clear of the contract and lamber for the separate clear of the contract and the shall be separate clear of the contract and the shall be separate clear of the contract and the shall be separate clear of the contract and the shall be separate clear of the contract and the shall be separate clear of the contract and the shall be separate clear of the contract and the shall be separate clear of the contract and the shall be separate clear of the contract and the shall be separate clear of the contract and the shall be sha | 398 | Dictionary of the Economic | | | | | | | |
|--|------------------|---|--|--|--|--|--|--|--|
| FODD. 1455 FOOD. 1455 FOOD. 1455 FOOD. 1455 FOOD. 1455 The leaves are made into curry and eaten by patients under teament, with the roots or the pelly from the leaves. It suffered to stand for a few minutes, the pelly clears, "the gelatinous or muchaginous patients where teament, with the roots or the pelly from the leaves. It suffered to stand for a few minutes, the pelly clears, "the gelatinous or muchaginous patients had been as a contract and float in the centre. Leaving the water clear like Madeira wine, and almost tasteless." (Rozb.) With regard to this property the remark under the vernacular name Farita-bit should be read in Eastern Bengal the writer repeatedly observed the milkmen carrying milk to market with a few leaves of this plant and the spine-like leaflets of the date-palm placed in the vessel. On enquiry he was told these prevented the milk loing getting bad through the heat and the shaking to which the leaflets of the date-palm placed in the vessel. On enquiry he was told these prevented the milk loing getting bad through the heat and the shaking to which the leaflets of the date-palm placed in the vessel. On enquiry he was told these prevented the milk loing getting bad through the heat and the shaking to which the leaflets of the stand the shaking to which the leaflets of the contract of the plant. Good, with the leaflets of the contract of the order Hemujera Several species are, by Enfondologists, referred to this genus, but two only are decommercial importance,—the one a native of Southern Assa and the other and a substant of the contract of the order Hemujera Scholard Contract of the Or | | The Cochineal Insect. | | | | | | | |
| this as a Sind drug under its bazar name of samir, and remarks that it is employed in pains of the head Food.—The leaves are made into curry and eaten by patients under treatment, with the roots or the jelly from the leaves. If suffered to stand for a few minutes, the jelly clears, "the gelatinous or mucilaginous parts separate, contract and float in the centre. leaving the water clear like Madera wine, and almost tasteless." (Rozb.) With regard to this property the remark under the vernacular name Farth-bit should be read. In Eastern Bengal the writer repeatedly observed the milkinen carrying mike to marke with a few leaves of this plant and the spine-dense provided the milk form getting bad through the heat and the shaking to which the set of the spine of the | | und na- | | | | | | | |
| TASS COCCUS; Packard, Guide to the Study of Insects, 526. A penus of insects belonging to the Coccident of the Order Hemptera Several species are, by Entonologists, referred to this genus, but two only are of commercial importance,—the one a native of Southern Asia and the other of the million of the Coccident of the Order Hemptera Several species are, by Entonologists, referred to this genus, but two only are of commercial importance,—the one a native of Southern Asia and the other of the million of the order of the | | this as a Sind drug under its bazar name of xamir, and remarks that it is employed in pains of the head Food.—The leaves are made into curry and eaten by patients under treatment, with the roots or the jelly from the leaves. If suffered to stand for a few minutes, the jelly clears, "the gelatinous or muclaginous parts separate, contract and float in the centre, leaving the water clear like Madeira wine, and almost tasteless" (Roxb) With regard to this property the remark under the vernacular name Farid-bits should be read. In Eastern Bengal the writer repeatedly observed the milkmen carrying milk to market with a few leaves of this plant and the spine-like leaflets of the date-palm placed in the vessel. On enguiry he was told these pre- | | | | | | | |
| Spherical scale Coccus cacti, Linn The Cochineal Insect; Cochemille, Fr; Kochemille Scharlichwurh, Germ; Coccinicha, It, Cochinealla, Scharlichwurh, Germ; Coccinicha, It, Cochinealla, Veta — Airmdan, Beng, Kirman, Bonn, Kirandan, N.V. P. Kirm, Pa References — Royle, Pool Res of India, 3, T. Engylagh Britannica, VI, 97; Baffour, Cycl of India, Luchard. Dres and Tants of India, Hardis, Report on the Dyes of India, 2 Much, Dyes and Tants of India, V. Pri. | 1456 Domestic | e plant. good, uutant, trussin put pie ink (Kozo) COCCUS; Packard, Guide to the Study of Insects, 526. A genus of Insects belonging to the Coccide of the Order Hemiptera Several species are, by Entomologists, referred to this genus, but two only are of commercial importance—the one an antive of Southern Asia and the other of the | | | | | | | |
| C. 1458 | 1458 | spherical scale Coccus cacti, Linn The Cochineal Insect; Cochenille, Fr; Kochenille Scharlchwurk, Germ; Coccingula, II, Cochinilla, Sp Vern—Airmdana, Beng, Kirmar, Bomb, Kiranda, N. W. P. Kirm, Pa Vern—Response M. St. | | | | | | | |

The Cochineal Insect.

coccus cactı.

Official Papers on Pigments used in India, Crookes, Dyeing and Calico Printing, 350, Hummel, the Dyeing of Textile Fabrics, 349;

Habitat.—The Cochineal insect was first discovered by the Spaniards in fluction in the year 1318, but it was not made known to Europe until 1523. At first it was supposed to be a seed, but in 1703 Leeuwenhock showed it to be an insect. In Meuco it is particularly abundant in the provinces of Oaxaca and Guerrero. It occurs in many localities in Central America, and for long has been one of the most important articles of export from Guatemala, but it is met with also in South America, and recently it has been found (or perhaps only an alled insect) in the West Indies and in the southern portions of the United States.

HISTORY AND INTRODUCTION—The immense importance of the trade, early established in this insect, led to efforts for its propagation in other countries, and for many years this has been profitably prosecuted in Tenerifle, the Canary Islands, Java, Algeria, and to some extent even in Spain According to some writers the best quality now comes from Honduras. The attention of the Court of Directors of the East India Company was directed to this subject by D James Anderson of Madras in 1756. He forwarded to Sir Joseph Banks samples of a dys-yielding insect which was proved to be a species of Coccus, but not Cochineal

HISTORY. 1459

species of Cactes or Opinitia. On the China and Manilla species of the Nopal, and even on that from Kew, the survivors began to die fast. It forture all they

Neils seen

plant

| 400 | Dictionary of the Economic | | | | | | |
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| coccus cacti. | | | | | | | |
| HISTORY. | to the discovery of America, and therefore no Cactus can be called indigenous to India. This is more than a quibble as to the correct usage of a scientific term. If the Coccas sent to Sir Joseph Banks, one hundred years ago, was found feeding on a Cactus, it must be regarded as but an earlier introduction than the Cochineal brought to India by Oaptain Nelison. It therefore seems probable that the Portuguese (or whoever introduced the Opuntal) may have intentionally or unintentionally brought the Cactus-feeding Coccus also. In 1843 Dr. Dempster addressed a letter to the Governor General of India which alterwards appeared in the Journal of the Agri. Hotticultural Society. He there eviols the superior quality of the dye obtained from 'the native" or 'indigenous' insect as compared with the imported. "The quality,' he says, "of native Cochineal which I found capable of dyeing a certain weight of woollen cloth proves that the indigenous insects contain an | | | | | | |
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| | Juliunder Doab "as to become a nusance, and rewards were offered for its externmention, which, however, were rendered unnecessary shortly after, as a large number of insects of some kind of Coccus appeared and soon effected the destruction of the plant, which is now only occasionally to be met with" | | | | | | |
| | species of Opunita; but as we have abundance of the South American plant, O cochmillifers, that species may also be tried along with the several sorts of our own." | | | | | | |
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be allied to the C feeding on Tame exudation known as Manna THE INTRODUCTION OF THE OPUNTIA OR PRICKLY-PEAR—The above remarks may be accepted as disposing of the question of "the indigenous cochineal insect which feeds on the common prickly-pear" If not indigenous then, as an acclimatised insect, has it deteriorated after

COCCUS

cacti. the lapse of too to 150 years? Perhaps the further question may also be suggested-was the insect derived from the best stock? If unfavourable answers have to be given to these enquiries, then it would remain to be ascertained by actual experiment whether an improved and fresh stock Madras ochineai Plant. IAGI Europe, and at the same time the head quarters of the acclimatised Opuntas The sudden appearance and disappearance of a Coccus in the Panjab, mentioned by Mr Baden Powell, would justify the conclusion Pan fab ochineat Plant. 1462 Rombay Plant. 1463

Grana sylvestris A voluminous correspondence has ensued since 1705 as to the desirability of introducing the superior quality, which fetches (from its greater amount of the functorial principle) three times the price

MODERN EFFORTS TO REINTRODUCE THE COCHINEAL INSECT.

at that at at all a hard a hard a

| cactı. | Forms of Cochineal. |
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| | paid for the wild insect As late as 1882, the Madras Government had this subject brought to its attention, and instructions were given that |
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| | FORMS OF COCHINEAL. |
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| | definite opinion than that a superior or an inferior cochineal was found |
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| | The common property was a superior and because you to be |
| Grana Fina | logy, subsity attempts were made by the late M. Sundt and it is a fatter considerable expense incurred, and a heavy amount of correspondence, as usual in such cases, the whole ended in smoke" (FI Bomb Co.) |
| 1465 Grana sylves- tris 1466 | Supp. 40) GRAMA FINA AND GRAMA SYLVESTRIS—Humboldt was, perhaps, the carliest observer to distinguish "the fine from the safetater or wild sort of cochineal". The former insect, he says, is meally, or covered with article powder, while the latter is enveloped in a thick cottony substance which prevents the rings of the insect being seen. The Grama fina is more to be a native of Microca, and the Grama sylvestris of Solvandard or Baffour remarks. "It has been mentioned that at As the coch |
| Red-flowered Opuntia 1467 | - ; |
| Yellow- flowered Opuntia. 1468 | yellow flowering prickly pear or Opunta. I have seen it fried at Beilally and fail." Commenting on the Mr. Llotard remarks fand he has been followed by several more recent writers. "Regarding the future in India, it may be well to lay stress on the statement made by Dr. Balfour that Cr. 1682. |

| Peculiarities of the Cochineal Insect. | coccus cacti. |
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| the true cochineal insect only destroys the prickly pear plant with red flowers and few prickles, and will not propagate on the yellow-flowered plant or Opunta." Again, "as regards the Pennsular, we learn from Dr. Balfour that not only the ear-set y(a) of plant required but the superior species (a) of the insect also easts in parts of the Madras Presidency." Although Dr. Balfour's remark as to the existence of the true | |
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| (' rt-r can) be | |
| If | |
| Balfour be correct in the statement that the latter insect does actually | Steps to be |
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| on the red-flowered cactus is or is not a race derived from the true co- chineal insect, perhaps more anneant than Qaptain Neilson's stock. The position assumed by Mr. Liotard of urging the extended cultivation of the an | 1409 |
| A second | |

fostered in anticipation of the arrival of a fresh importation. Degenera-tion, if established, might be accounted for by an originally semi-domes-ticated creature having been allowed to run wild for a century or more, or from having been forced to feed on the wrong plant. Mistakes may thus be made, but the course indicated would most probably prove the most direct, and it may happen that we possess a long-acclimatised stock which, under careful treatment, would prove more hopeful than any insect that might now be introduced

2 D 2

1470

| 404 | Dictionary of the Economic | | | | | | |
|-------------------------------|--|--|--|--|--|--|--|
| coccus cacti. | Propagation of the Cochineal Insect. | | | | | | |
| Male. 1471 | "The male also adheres to the plant, and in about 12 days becomes enveloped in a cottony cylindrical purse, open at the bottom; the insects | | | | | | |
| | | | | | | | |
| Female. 1472 | They appear generally mouth are quite sunk in us are almost covered by | | | | | | |
| | t ' ed on her ex- cording to the indicate the | | | | | | |
| Cochinest resting. 1473 | ving upon the plant, of a mouth she has introduces into the uch is her excessive again. After shed, ecomer a mere shift, and the shed her young that measures are taken to remove a mere shift shed her young that measures are taken to remove account of the cactus leaves. A next is formed, in the shape of a sausage or purse, of cotton gauge or other itsue percede with small holes, in which 8 or 10 of the females are put, and the purse is fastened at the bottom of a leaf of | | | | | | |
| | | | | | | | |
| | cochineal mother produces above a hundred young ones; but the mor- tality is great, and three or four mothers are required to cover one side of a cactus leaf with sufficient young for cultivation." | | | | | | |
| 1474 | PROPAGATION. In an interesting pamphlet written by I. S. C. D. and published by the Government, much useful information has been brought together regarding the various systems pursued in America and other countries in the propagation both of the insect and the plant. We cannot afford space to deal with this subject, and must accept the above abstract of the | | | | | | |

The Cochineal Dve.

COCCUS cactı.

life-history of the insect as indicating the great governing factors with for he doe o On at a Pilend in another

The following useful "The Collection t to which the 1475

leaving only one or two of these insects on the branches is fatal to the health of the plant " "The cactus cannot bear much water when not strengthened with manure " "When a plantation is reserved for the production of a winter crop, the leaves should be covered with cochineal in the month of October or November, by planting the young cochi- Propagation. neal at this serson it ripens, and is ready for gathering at the latter end of February or of March Another part of the plantation is reserved for receiving the seed at this season, but as the plants cannot be forced to bud during the winter, the seed must be planted in March upon last year's leaves, which have the disadvantage of being tough for the insect, and this renders a winter crop more precarious than one obtained in summer" Wind and rain are very destructive hence a region with a pro nounced rainy season would either be unsuitable or the seed-stock at least

1476

Suitable Climate 1477

COCHINFAL DYR.

Treatment of Crop 1478 DYE 1479

Mr Wardle, in his recent Report on the Dyes of India, mentions experiments performed by him with several samples. Of a Hyderabad sample he says, it "appears to be very good " "The Government report, in which reference is made to it, is by Major W Tweedie" "It would be interesting to ascertain whether the cochineal is produced in the Hyderabad Residency, or is imported from South America." Of

sists of insects matted together by some dark-coloured substance Both samples small and poor " Reference has already been made to Dr Dempster's report on cochineal from the lower North-Western Himalayas He says "It is beyond all doubt a true Coccus cacti, and

Dempster continues "In the month of December the young brood were extremely numerous, very lively, and ready to leave the mother and spread themselves over the plant Sulphate of alumina, added to an alkaline solution of the colouring matter of the native (sic) cochineal.

| 400 | Dictionary of the Brownia | | | | | | |
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| coccus cacti. | The Cochineal Dye. | | | | | | |
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| | Europe-dyed scarlet broadcloth" "I find here an imported cochineal | | | | | | |
| 1480 | ha an tram Banna tag | | | | | | |
| 1400 | | | | | | | |
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| | cloth proves that the indigenous insects contain an amount of colouring matter not inferior to the fine Mexican cochineal." This statement is so completely at variance with the opinions of all other European writers, | | | | | | |
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| | shannon at all a to also all at the proof of The | | | | | | |
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| | in this village are lined with magnificent specimens of the cactus, far superior to any I have seen since I left Ludianah, and their leaves are covered with the cochineal insect, which, it strikes me, attains here, probably from good feeding, a larger size than I have ever seen it do before As I passed these hedges of the prickly pear, numerous Kashmirs were scraping the cochineal with a blunt iron instrument from the surface of the leaves into c. | | | | | | |
| | asking them wi | | | | | | |
| | to the Amritsar ser (2lb) of the | | | | | | |
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| 1491 | seen by Dr Fleming was the Grana sylvestris. | | | | | | |
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| | or | | | | | | |
| | that weight. These two figures are almost alternately given by different writers—a fact which may be accounted for by the larger or smaller size | | | | | | |
| 1182 | of the different breeds of insects | | | | | | |
| | erly much em- ced by the use | | | | | | |
| | sduction of the | | | | | | |
| | shades of red are obtained from cochineal, namely, a bloish red, called | | | | | | |
| | C. 1482 | | | | | | |
| | O1 1402 | | | | | | |

Cochineal as a Medicine. crimion, and a yellowish or fiery red, called scorlet' Wool mordanted with 2 per cent of bichromate of potash and dyed in a separate bath receives a good nuribe, the colour being darkened by the addition of

Wool dyeing 1483

COCCUS

cacti

Slik d_{yelng} 1484

For sife the mordant is alum, to be worked into the fabric for half and over and steeped overnight. The fabric is their washed and dried and dyed in a separate bath. This gives the crimson. For the scarlet, after boiling and washing the sife is first grounded with a light yellow produced with scap and arratto and thereafter washed. For darker shades soap should not be used. In both cases the fabric should be mordanted by the same process as described or the crimson, only using intro-murate of the in place of alum. By the aid of iron mordants fine shades of blac may be obtained.

Pigments. 1485

part amber, and 2 parts linseed oil
(For Ammonical Cochineal see under paragraph of Chemistry)

COCHINFAL AS A MEDICINE

Medicine.—Cochineal is used mainly as an agent for colouring drugs, but it is supposed by some to possess anti-spasmodic and anodyne pro-

MEDICINE 1486

perties Chemical Composition -As far as has been determined, cochineal and lac owe their tinctorial properties to an acid apparently identical in character This is formed within the body of the female insect The chemical examination of this substance has revealed somewhat conflicting results-a fact which has led certain writers to presume that its composition varies Pelletier and Caventon isolated the acid from cochineal and called it carmine, a nitrogenous compound which they expressed by the formula CaHiaNOs. Subsequent observers (Arppe, Warren de la Rue, Hugo Muller, &c) showed it to be an acid, and found that, in a perfectly pure state, it does not cortain nitrogen, though accompanied by nitrogenous matter which it is difficult to separate from it John named the colouring principle cochinilin. The acid of the authors named has been expressed as $C_1H_1O_p$, but the crystalline carmina and isolated by Dr Schützenberger is given as $C_1H_2O_p$, the same substance being expressed by Dr Schaller as $C_2H_2O_p$. Most recent writers give its formula as C_{11} . H₁,O₁₀ (Crooker) It may be separated from cochineal by precipiting its aqueous extract with plumbic acetate and decomposing the washed pre-cipitate with sulphume and The solution thus obtained is alternately precip tated, and the precipitate decomposed, a second and a third time in a similar manner, employing, however, hydric sulphide to effect the final decomposition. The filtered solution is evaporated to dryness, the residue dissolved in alcohol, and the crystalline nodules of carminic acid

CHEMISTRY. 1487 OCCUS cacti.

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Trade in Cochineal.

obtained on allowing this solution to evaporate treated with water (Miller, Elements of Chemistry, P III, 690) This same substance has been found in the flowers of Monarda didyma and probably in other plants Pure carminic acid is a purplish-red substance, which, when reduced to a very fine powder, is bright red Its crystals taste decidedly acid, it is very soluble in It may be id may for heated to 126°

ordinary purpe treating the resume with successive portions of no min, alcohol, which on cooling deposits a part of the carminic and and yields the remainder by

solution unless some ammonia be next added, when carmine lake is thrown down Neutral alkaline salts turn carminic acid to violet, while the acid salts of alkalies (bitartrate of potash, for example) render the shade more of an orange

The chemical history of the carminates is, however, incomplete alkaline carminates are soluble, the others, as far as has been ascertained, are amorphous substances The different results obtained with cochineal

1483

1480

For further particulars see Carmine

TRADE IN COCHINFAL

The Madras Government exported in September 1797, 21,744th. From the reports of the sales of Indian Cochineal during the years - the 55,106b were sold at an average of tle more than the prime cost d in 1807 that during the past seven

England, but that from the London n article of profit to the Company. propriety of discontinuing the pur-

chase or reducing the price to be paid to the producers The home authorities, with the view of still further fostering the industry, directed the

C. 148a

| The Lac I | nsect. | | | Coccus lacca. |
|---------------|--------|-------|----------|------------------|
| 1.1 | ٠, | . 1 . | - n. | |

1490

trade been destroyed by antine that a large quantity of lac-dye was recently thrown into the Thames as worthless and unsaleable (For the trade in lac-dye see a further page)

1401

Coccus lacca, Kerr

THE LAC INSECT, Fng , LAQUE, Fr , LACK, Germ , LACCA, It Vern — Lakh Hind , Gold, Beng , Laksha Sans

"ndia and occurs

especially Butea a complete list of

1402

DESCRIPTION AND MOD' OF GROWTH—Lae is the resinous incrustration formed on the bark of the twigs through the action of the lae insect. When the larvae or grubs of the Coccus lacca escape from their eggs they craw about in search of freels sappy ting. When satisfied, they become fixed and form a sort of cocoon by excreting a resinous substance. The male cocoon is one of in shape, the female circular Tor about 25 months the insects remain within their cocoons in the lethargic state but

it at once commences to crawl over the females. The impregnated female after depositing her eggs below her body, commences to construct cells round each with as much precision as the bee forms its comb

the resnous exertion—lic—which it encurts around stell. As time advances further changes no usable, the body of the fenale enlarges considerably and becomes brilliantly coloured. The red colour is due to the formation of a substance intended as food for the offspring. The eggs germinate below, and the larve, eating their way through the body of the mother, make their escape to repeat this strange history.

| 410 | Dictionary of the Economic |
|-----------------|--|
| coccus lacca | Trees on which the Lac Insect feeds |
| 1403 | TREES ON WHICH THE LAC INSECT IS REPORTED TO FEED |
| | TREES ON WHICH THE LAC INSECT IS REPORTED TO FEED 1 Acaca arabica, Willd (Leguminosæ) The Bibilon Kikar (Gamble, 157) "In Sind and Guzerat yelds large quantities of lac" 2 Acaca Catechu, Willd. (Leguminosæ) Silkeri, Brva 3 Albizza Incida, Benth (Leguminosæ) Silkeri, Brva 4 Aleintes moliccana, Pulld (Euthorbriograf) The Akrot of the plans, introduced from Malay, now almost wild, especially in South India 5 Anosa aquamosa, Linn (Anonanceæ), The Ala, a tree introduced from the West Indies 6 Butea frondosa, Roy (Leguminosæ) A climber, scarcely distin guishable from the tree B frondosa except by its habit 8 Carissa Cariadas, Linn (Arothaceæ) Var spuarum, sp. A DC 7 Butea superba, Rot (Leguminosæ) A climber, scarcely distin guishable from the tree B frondosa except by its habit 8 Carissa Cariadas, Linn (Arothaceæ) Var spuarum, sp. A DC 7 Celtis Roxburghu, Bedd. (Urticaeæ) Eastern Bengal, Central and South India 8 Carissa Cariadas, Linn (Leguminosæ) The Carob Tree; now almost naturalsed in the Panjab and South India. 10 Certatolia Siliqua, Linn (Leguminosæ) 11 Dalberga Intifolia, Roxb (Leguminosæ) 12 Dalberga Intifolia, Roxb (Leguminosæ) 13 Dalberga Intifolia, Roxb (Leguminosæ) 14 Delicariadrose Gueera, IV & A (Leguminosæ) 15 Delicariadrose Gueera, IV & A (Strrguliaceæ) 16 Erolena Hockerana, IV, & A (Strrguliaceæ) 17 Erythina indica, Linn (Urticaceæ) 18 Frous bengulenska, Linn (Urticaceæ) 18 Frous bengulenska, Linn (Urticaceæ) 19 Frous bengulenska, Linn (Urticaceæ) 20 Frous comosta, Ro |
| ļ | 32 Ougeina dalbergioides, Benth (Leguminos E) The Sandan 33 Prosopis spicigera, Lein (Leguminos E) The Fland of the and zones |
| - 1 | of the Panjab and Guzerat 34 Pterocarpus Marsupium Rosh (Leguminos E) The Bija or Ling tree, |
| ļ | a native of Central and South Ind a 35. Pithecolobium dulce, Benth (Leguminosæ) The Dikhini babil, a |
| , | tree introduced from Mexico Schima crenata Korth (Ternstræmiaceæ) An evergreen tree of Burma |
| | C. 1493 |

| Products of India. | 411 |
|--|-------------------|
| Uses of Lac. | coccus lacca. |
| 37. t | |
| 33. \ | } |
| 39 lacel- | |
| 40. " ting mand r. (Manney news) The Tank-search a native of | 1 |
| 4t. 7. 42. 1 | |
| 43. Zizyphus zylopyta, Willd. (RHANNER). The Kat-ber. PROPERTIES AND USES OF LAC. | |
| After the larvæ escape, the old encrusted twigs are removed and cut up into pieces 4 to 6 inches long. These form stick-lac. They are spread upon a flat floor and a roller passed over them by which the resinous to the control of th | Ediale Lag |
| · | Lac-dye. 1495 |
| | Seed-lac. 1496 |
| | Shell-la |

Sheet-lac. 1498

Button-lac.

1400
B C
I500
Liver.
I501
Native
Orange
I502
Garnet.
I503
Native-leaf.

1501 Adulterated Lac 1505 COCHLOSPERMUM Gossynium.

Lar Dee White Silk Cotton Tree

Varnish 1506 Battl 1507 Sealing-wa I508

Cement

1500

smell on crushing the lac The writer was once informed by a merchant that his firm in the usual course of business imported very largely resin which he believed was used up by the native dealers in adulterating the lac which they and other merchants exported. The gentleman in question condemned strongly the process of adulteration, but justly remarked that resin was an ordinary article of trade used for other purposes which if they discontinued to import would only be more largely imported by other fiems

Uses or Lac -In India lac is dissolved in native spirits and coloured. in this form it is used as a varnish for carpentry and furniture, mixed with sulphur and some colouring agent, it is formed into the sticks batti like scaling wax, which are used by the toy makers to coat their wooden wares. In Europe it is largely made into sealing war and dissolved in spirits, it forms spirit varnish It is made into cement and into lithographer's ink, and Is used to stiffen hats and other articles constructed of felt

I to Den

Dye 1510

Having now indicated the main features of the lac industry collectively, the present article may be concluded by dealing in greater detail with the subject of the dve extracted from Coccus Jacca The reader is referred for further particulars regarding the Luropeon industry and trade in the Resin to the article LAC

information regarding its use in the North (vest Provinces the existence of the resinous matter mechanically mixed with the dyc. lac is not so easily worked as cochineal All the reactions and processes C -1-I - b o or and cable

1511

1512

extent in India, the article is scarcely, if at all, exported

COCHLOSPERMUM, Kunth , Gen Pl , I , 124. 971.

Cochlospermum Gossypium, DC, Il Br Ind I, 189, Bixivex SOMETIMES CALLED WHITE SILK COTTON TREE!

White Silk-Cotton Tree.

COCHLOSPERMUM Gossypium.

Syn -Bonbax Gossypium, Linn Roxb, Fl Ind, Fd, C B C, 515

For the Gum - Moodeen Sheriff gives the following Not kå katéra, not ka katera gönd, Dec., Hindi katéra, HIND., Tanaku pishin TAM., Konda gögu-banka, konda gögu pisunu, TEL; Shima pangi pasha, MAL.

For the Cotton — Pili kapas ki rki, katéré ké jidar ki rai, Dec., Tanakuparutti, Fasi , Konda edgu-patti, TEL., Shima pangi parutti, MAL. Relazones — Pendi En. E. - Coulti. N. T. T. 1. 2. 2. 4.

Habitat — A small deciduous tree, with short, thick, spreading branches; grows in forests at the base of the North-Western Hundlaya from the Sudle eastward to Central India, Bundelkund, Behar, Orissa, and the Deccan, also in the Prome district of Burma Commonly planted near temples When the tree is devoid of leaves (in March to April) it bursts into its handsome large yellow flowers, its pendulous, pear-shaped fruits ripering before the new leaver appear.

Gum -This is often sold in the bazaars of India as kitfra or kathira

GUM 1513

doubtiess be employed to impart a polish to tasar silk

Stewart remarks "The kâtira, of which to maunds are eated by Disset Trade Report to be imported annually with Peshawar, must be entered by mistike, or be the product of a different plant" (Doubtless the true katira or Traywanth—FI) "And, oddly enough, the same authority, gives 50 manufo of this substance as exported from Ludhana.

COCO or COCOA.

The White Silk-Cotton Tree.

GUM.

R4 per maund, retail or bazaar, 3 annas per pound of the worst or black variety, wholesale, R3 per maund, retail or bazaar, 2 annas per pound"

FIBRE Floss 1514 Fibre.—The seeds possess a short but very soft and elastic floss, from which fact the plant has received its specific name. This floss is much too short to be of any service as a textile fibre, but, with the flosses of Bombax malabaricum, Endenderion anfactatosum, and Calotropis grgantea, it has been classed as a "silk cotton" By some writers these have recently been designated "happic fibres" but there is every reason to believe that the true kapok of the Dutch upholisterers is the floss of Endenderion anfactatosum (see Vol 1, B 641). In some parts of India the floss of this tree is collected and used for stuffing pillows, for which purposes it would seem better suited than the floss from Bombax malabancium, as it is not so liable to get matted. It might be found serviceable as a gun-cotton, (Conf. with C. 175 and Kanok in a further volume?

Bark 1515

The Rev A Campbell states that the Santals prepare a good, useful cordage fibre from the bark of the tree In the report of the Conference held on Indian fibres, at the late Colonial and Indian Exhibition, it is stated that Mr Campbell's fibres from this tree were much admired, the floss being viewed as possessing the ment of elasticity—a ment which

01L. 1516

might allow of its competing favourably with the true kapok
Oil.—The Rev A Campbell, Santal Mission, Chuta Nagpur, denabundance
seeds is well
in this Oil and
ond the favo

MEDICINE. Gum 1517 Floss. 1518 Medicine—The gum has the properties in a mild degree of Tragacanth, for which it is proposed by Moodeen Sheriff and others as a substitute. It is also used as a mild demuleent in coughs. The flors has been recommended as admirably suited for padding bandages, splints, &c. being soft and cool On this account it has been suggested as suitable for pillows and cushions used in hospitals, &c. Irvine (Mal Hed., Patha, p. 78) says the dired leaves and flowers are used as stimu-

TIMBER.

Structure of the Wood —Extremely soft, grey, but has no heart wood, and is not apparently put to any useful purpose, weight 17th per cubic foot.

Cockles, see Molluscs (edible)

Coco or Cocoa, see Cocos nucifera; Coca, see Erythroxylon and Cocoa Nibs, see Theobroma

| The Cocoa nut Palm | nucifera |
|--|----------|
| COCOS, Linn , Gen Pl , III , 945 | } |
| Cocos nucifera, Linn, Brandis, For Fl, 556, PALME | 1520 |
| THE COCOA-NUT PALM, THE COIR OF COCOA NUT FIBRE; PORCUPINE WOOD; COCOSER, Fr., COCOSNUSS, KAIR, Germ | 13.0 |
| Vern — Norel, nársyal nor nársyal, dob, narakel Ber yal, jháda naryal, Guj, mar, naural, Bons , Na | 1 |
| | |
| Complete and the second | |
| JAYA Dr Vener Conne (Konne) - Connen Oit, Cocoa Nut Oit— | |
| A STATE OF THE STA | |
| | • |
| WATEN I CHIN Engans, DUK, Yella nir, TAM, Yella niru, TEL TODOWY, HIND, North kveledi, manille, DUK, Tinga kallu, tennan- kallu, tennang kalli, TAM, Tenkaya kallu, tenkala, TeL, Narglie, narglii, ARAB, I Teryenargi, Hes FIRET GUY [See first paragraph of chapter on Cont), HIND; Tennam nar, TAM, COO, MUC CAR, TEL TENNAM karta, TAM, Tenkala gurtu, TEL, Nard ta krute, ARAB COTTON OF TORRYTUM— Tennam martistis pingue, TAM, Tenkesa-chelis puthie, TeL, Tennam phylo, NAL Relarances—ALL, T. C. | |

| 4.0 | Dictionary by the Economic | | | | | | | | | | |
|---------------------------|--|--|--|--|--|--|--|--|--|--|--|
| cocos nucifera. | The Cocoa-nut Palm. | | | | | | | | | | |
| Indian Region. IS21 | Habitat.—A punate-leaved palm, with a straight or often gracefully curved stem, marked by annular scars; cultivated throughout tropical India and Burma, especially near the sea-coast. On the eastern and wester coasts it is particularly abundant, more so towards the south. There are straight to the season of t | | | | | | | | | | |
| | | | | | | | | | | | |

| The Cocoa-nut Palm. | cocos nucifera |
|--|-------------------|
| geographical and physical conditions were different from those of our day." CULTIVATION OF THE COCOA-NUT. It is commonly reported that there are in India 480,000 acres under the cocoa-nut. A number of passages from Indian authors will be found scattered through the present account of the palm, which every now and again recur to the question of its cultivation. It may, however, be | CULTIVA- |

better known European writers, since from these may be gathered the results of scientific experiments.

SOWING—Ripe nuts, carefully collected, should alone be employed as seed, and for this purpose they are usually gathered from February to May. Seed from very young or very old trees should be avoided. After thaning been kept for a month to six weeks they should be planted

Sowing 1522

Initials of their surface exposed. Asires, or asires and soft, should be freely placed in the trenches, these act both as a manure and as a preventative against insects. The seed-bed thus prepared should be kept moist, but not solked. The germinated seeds may be transplanted when they are in their second to their sixth or even twelfth month. In the Godward district they are placed in their permanent positions when three to four years old. In damp localities the transplanting may be done in the hot

Transplanting 1523

· nlan-

ulsthe

deep mit could rive some pits should be nined with saind. In matchy land, walls should be constructed around them. Ashes are often recommended to be freely mixed with the prepared soil to be put into the pits, as this is supposed to prevent the attacks of the beetles that prove so destructive to the trees. Cultivation of turneric, arrow rote, kee, in the pits, along with the occoanuts is believed to be beneficial. The soil round the seedlings is also often kept damp by a bed of leaves, particularly such as will not en-

rains, the soil being replaced and levelled about the close of the rains. By the fourth year the stem begins to appear and has about 12 leaves; it is distinctly visible by the fifth year, when the tree has about 24 leaves. The spathes commence to be formed by the sixth year, and the stem is the 1102 feet above the ground, but in exceptionally favourable chantes

| 418 | Dictionary of the Economic |
|--------------------|--|
| cocos nucifera. | The Cocoa-nut Palm |
| CULTIVA- TION | together with a little salt, placed in the pit in which it is intended to plant the tree |
| Yield 1525 | Yield — As a rule a cocoa-nut throws out a spathe and a leaf every month: each flowering spike yields from 10 to 25 nuts. The produce of a tree in full health and properly tended may be from 50 to 20 and even 200 nuts a year, the yield depending greatly, of course, on the suitability of the climate and soil for cocoa-nut cultivation, a safe average would be 100 nuts a year to each tree in full bearing. The cocoa-nut will continue to bear for 70 to 80 years. |
| 1526 | CULTIVATED FORUS |
| Dwarf Cocoanu | turns red when the outer skin is removed, 4th, the ordinary form; 5th a small nut about the size of a turkey's egg. This lists form is rire but much admired. Spon (Enzycl., 1923) says "there are some go varieties of cocoa-nut distinguished by the natives of the districts producing them, but many of these distinctions are obviously groundless". Repeated reference will be found throug occur in India, but of these, the Laccadives, searcely any fruited form, with a soft, fine consideration where the obi. Dr. Shortt says there are 30 different forms in Irayanore. The distinction of the consideration where the soft in the largest variety of cocoa-nut that I have seen and examined comes from Ceylon. I have occasionally seen specimens nearly as long from the Coromandel coast. There is a small dwarf variety which fruit while |
| 1527 | |
| soli 1528 | announcements of branched econ-nuts econsonally appear, as also of branched date-palms. These are were dwth superstitious horror by the ignorant. They are most probably the result of two plants growing to gether, or of two or more embryos in one nut. Soil.—The cocoa-nut "thrives best in low, sandy situations, within the influence of the sea herere, and never attains the same perfection when grown inland." (Spoil: Encycl.) Simmonds writes: "Soils suitable for a cocoa-nut plantation are variously described as below, particularly observing that stony grounds, or those overlying rocky foundations, are to be avoided.— "1 Soils mixed with sand, either dark-coloured or river-washed." "3." "4." "5." "6." "7. field. "1. following that soil is the soil of |
| | "7. Marshy land even in brackish soils (but not where sail is ormed in |
| ' | oil is good, as |
| | '9 Lastly, even the floors of ruined houses well worked up, and any places much frequented by cattle and human beings on account C. 1528 |

| The Cocoe nut Palm | | | | |
|---|------------------|--|--|--|
| of the ashes and salts of ammonia from the urine, &c, depo- Simonds further says in the soil." Simonds further says in The sults for seed should not, on being gathered, be allowed of the salts for seed should not, on being gathered, be allowed the salts of the salts of says in the salts of fastering the salts of the salts of the salts of the salts of the jured and collect damp about the nut, or the shell inside may be cracked and the water disturbed. These are fatal injuries, or even if the plants | CULTIVA- TION | | | |

is recommended to be thrown into the pits when the earth is being returned around the plants. Half sand half earth is considered the best

"Nurseries should be somewhat exposed to the influence of the sun, though not too much heat plants thus grown will even, though deficient in stature, be strong, and when transplanted will not fail, nor suffer from heat. The planting of the nuis should take place in January to April, and also in August provided the rains are not heavy and then the planter may expect fruitful trees to be produced when grown, but nurseries formed during the heavy monsoon will generally fail, or produce trees

PECULIARITIES OF INDIAN CULTIVATION

material to fill up the pits with "

The following passages from the Gazetteers will be found instructive and of value to intending cultivators as having a special bearing on India 1 In Bombay (Kolabi District) — Of the liquor yielding trees of this dis

f Bombay 1520

plant the ground is hollowed 3 or 4 inches deep, and during the dry

| cocos nucifera. | | The Cocoa-nut Palm. | | | | | | = | | | |
|--------------------|-----|---------------------|----|----|---|---|--|---|---|-----|---|
| CULTIVA- TION. | *** | • | -, | ., | , | • | | m | • | ••• | - |

in the garden is set apart for growing seed-nuts. The nuts take from

If the nuts are left to drop from the tree, which is the usual practice in Bassein, they are either kept in the house for some time and then left to sprout in a well, or they are buried immediately after they have fallen. When the nuts are ready for planting they are buried either enterly or from one half to two thirds in sweet land, generally from 1 to 2 feet apart, and sometimes as close as 9 inches. A little grass, ricc-straw, ordry plantan leaves are spread over the nuts to shade them. If which are great the nuts the grass is taken away, and some salt or saltish mut mixed with wood ashes and a second layer of earth is laid over the nuts. Nut-are sometimes planted as late as August (Shrásmi), but the regular eason is from March to May (Chairra and Vasihákh), when, unless the ground is damp and their inner moisture is enough for their nouroshment, the nuts want watering every second or third day unul rain falls. The nuts begin to sprout from four to six months after they are planted, and

she duck round the tree on named (a Adda) of providered dry

the ditch round the tree, 22 pounds (4 phylis) of powdered dry

1530

mixture of cow-dung and wood-ashes covered with earth; or nightow-which on the whole is the best manure. Palms suffer from an insect animed blanga which ginas the roots of the tree, and from the right black carpenter-bee which bores the spikes of its hill-open dark red puter occes from the trunk. When this is more than the roots of the blanga which ginas is suffering from the attacks of the blanga of the roots. When a palm is suffering from the attacks of the blanga of the roots of the roots of the roots of the roots. When this is more the pure is coming out and is filled with fail, which drives any or kills the need: To get it of the boring bee, it is either drawn out by the brind, or it is killed by rooting into the who he assigned a water or sale-water.

The Cocos nut Palm

COCOS nucifera cultiva-

(11) has the tree becars to stall a sprout comes out called Agree Age 1

"When the tree begans to yield, a sprout comes out called por or pograt the bottom of which is a strong web like substance called pstundri. After about a fortnight the tree flowers, though few blossoms come to perfection Many of the young nuts is fall off, and only a few reach muturity. A young nut is called bonda, a nut with a newly formed kernel is called side, and a fully-formed nut wird. A good tree yields three or four times a year, the average number of nuts being about seventy-five (Gar, MIII, 1, 25).

In the report of the hathiawar District (Bomb Gas, VIII, p 95), there occurs a short but interesting account of the cocon nut. 'At Ma

feet in diameter is cut in the rock and filled with mould. All the trees at

II Madras I53I

nearing the Madras Presidency from Bombay it becomes more and more plentiful. Of its abundance on the Malabar coast an opinion may be

that there are 80 000 acres under the co.on nut Indeed, the Malabar coast and the Laccaduc and Maldive Islands are pre-emmently the seats of the Indian occoon nut industry. The enquirer after Indian occoon nuts, 60,000 crocen hused in ender practically proneers himself with no other part of the country unless he add to these the Nicobar Islands. The last-mentioned islands furnish a very large number of cocoa-nuts, but apparently the islanders are ignorant of making core of express ng the oil.

ports from these islands are treated as if they were produce of the main-

The Cocoa-nut Pe'm

CULTIVA-

land, while the imports from the Maldives are returned as from foreign territory Last year the Maldi the Nicobar Islands 4 510,000 it is not reported that they man only a small amount of copra-

below that which prevails on the mainland of India

1532

Imperial Gazetteer as "possessing no important trade by sea or land" It seems impossible to believe that all the coir returned under the name of "Coch n Cor" on ld shorofore come from Coch n. Indeed the sis-

Cochin by sea amounted to only 680 cut, valued at R4,134, and manufactured cor 2,777 cwt, valued at R25,339 these were all sent to Bengal or Bombay, how much may have gone by land to Madras cannot be dis-- hin coice

pages, to the from these ief notice of

at on given rect : F 411

calna 1

1533

I he expenses of bear fruit about the ninth year after transplantation cultivation are stated to be R668 for a putts of land, -namely, R140, being the price of 600 young plants, R48 being the value of the labour required for planting them, and R480 being the wages of labourers employed to When the trees water and tend the trees until they come into bearing begin to bear fruit, the value of the produce of a tree, exclusive of the fibre, is estimated at about 12 annas a year, making the total value of the produce in a putti of land R 300 (\$ 70)

ш Mysore 1534

III In Mysore "there are four varieties of the cocoa nut 1st, red , 21 d, red mixed with green , 3rd, light green , and 4th, dark green These varieties are permanent, but although the red is reckoned somewhat better than Their produce is the others, they are commonly sold promiscuously nearly the same

"The soil does not answer in the Bangalore district unless water can be had on digging into it to the depth of 3 or 4 cubits, and in such situations a light sandy soil is the best. The black clay, called ere, if the next best soil The worst is the red clay, called kebbe, but with

proper cultivation all the three soils answer tolerably well

The manner of forming a new cocoa nut garden is as follows nuts intended for seed must be allowed to ripen until they fall from the tree, and must then be dried in the open air for a month without hiving the husk removed. A plot for a nursery is then dug to the depth of 2 feet, and the soil is allowed to dry three days. On the Ugadi feast (in March) remove 1 foot of earth from the nursery and cover the surface of the plot with 8 inches of sand On this, place the nuts close to each other, with the end containing the eye uppermost Cover them with 3 inches of sand and 2 of earth. If the supply of water be from

The Cocoa-nut Palm. COCOS nucifera

CULTIVA-

a well, the plot must once a day be watered, but if a more copious supply can be had from a restrow, one watering in the three days is sufficient. In three months the seedlings are fit for being transplanted. By this time the garden must have been enclosed, and hoed to the depth of a feet. Holes are then dug for the reception of the seedlings at 30 feet distance from each other in all directions, for when planted nearer they do not thrive. The holes are a feet deep and a cubit wide. At the bottom is put stand 7 inches deep, and on this is placed the nut with the young tree adhering to it. Sand is now put in until it rises a unches above the nut, and then the hole is filled with earth and a little dung. Every day for three years, except when it rains, the young tree mist have water.

saline substances Other soils, however, are employed, but black mould is reckoned very bad. The cocoa-nuts intended for seed are cut in the

then the young palms are fit for being transplanted. Whenever, during the two months following the vernal equinor, an occasional shower gives an opportunity by softening the soil, the garden must be ploughed five times. All the next mooth it is allowed to rest. In the month following the summer solstice, the ground must again be ploughed twice, and next month, at the distrince of 48 cubits in every direction, there must be dug pits a cubit wide and as much deep. In the bottom of each a little revously well watered.

each pit. The shell be filled with earth so

the young plants must be watered every other day, afterwards every fourth day, until they are four years old, except when there is rain. Afterwards they require no water

at any rate be ploughed, as the manure must be given, and as no rent is paid for the grain. On this kind of ground the cocoa-nut palm begins

cocos nucifera.

The Cocoa-nut Palm.

nucifera cuttivation.

to bear in twelve or thirteen years, and continues in perfection about sixty years. It dies altogether after bearing for about a hundred years. They are always allowed to die, and when they begin to decay a young one is planted near the old one to supply its place.

"In this country, wine is never extracted from this palm, for that opticable on the first, and these when ripe are considered as the opticable and the produce. A few green nuts are cut in the hot season, on account of the refreshing junce which they then contain, and to make corr rope; but this also is thought to injure the crop. The corr made from

the ripe nuts is very bad, and their husks are commonly burned for fuel.

"The crop begins in the second month after the summer solsuce, and continues four months. A bunch is known to be ripe when a nut falls.

"Six bunches,

om 60 to 70 I huts, raised

at his expense, by a man who fixes an iron rod in the ground, and forces its upper end, which is sharp, through the fibres, by which means the

IV Nicobar Islands, I535

IV On the Nicobar Islands the cocoa-nut palm is very abundant, although, as already stated, it exists only under recent cultivation on the Andaman Islands, but reappears still turther to the north on the group of the Cocos Islands. Sir W. W. Hunter gives an interesting account of the Nicobar trade in cocoa-nuts which may be here quoted. "At present the principal product of these islands is the cocoa-nut palm, and its ripe nuts form the chief export " "The northern islands are said to yield annually to million cocoa-nuts, of which about half are exported estimated number exported in 1881-82 was 4,570,000. As this important product is six times cheaper here than on the coast of Bengal or in the Straits of Malacca, the number of English and Malay vessels that come to the Nicobars is every year increasing" "The trade in cocoa-nuts is carried on chiefly by native craft from Burma, the Straits Settlements, Ceylon, &c Forty vessels of an aggregate tonnage of 6,270 tons visited the islands for cocoa-nuts in 1881-82." The Administration Report for 1885-86 gives the exports as 4,510,000 nuts and 5,730 bigs of copra. In that year 49 vessels, with an aggregate tonnage of 8,218 tons, obtained permission to trade with the Nicobar Islands for cocoa-nuts, &c. The same report states that there are now 112,000 cocoa-nut palms under cultivation

1536

at Port Blair.

V. Of Burma it is reported that the cocoa-nut is "largely cultiwated, and might be much more so in many places along the Arakan costs as it is Ceylon, and as doubtless it would be but for the sparseness of population, the difficulties of approaching the coast everpt at a few spots, and the absence of the means of Indicommunication between the ports and the sites fitted for the production of the trees," In the Bassein district of Pegu it

Bengal. 1537

and the 24-Parganas.

| The Cocoa-nut Palm | nucifera. |
|--|---------------------|
| VII. In Upper India the cocoa-nut is alluded to in many works, but | CULTIVA- |
| | VII Upper India. |

1538

forth no branches to face its violence, the cocoa, on the contrary, loves . . .

tropical zone"

VIII Ceylon - Speaking of Ceylon cultivation Mr Treloar says "The ripe nuts are first planted in a nursery, where they are covered an inch deep with sand and sea-weed or soft mud from the beach, and watered daily til they germinate. In two or three months a white shoot containing the foliaceous rudiments springs from one of the three holes in the end of the nut, the radicals emerging from the other two orifices onposite to the shoot, and penetrate the ground " This is not quite a correct description of the germination The leaf-stalk of the cotyledon elongates and pushes the embryo bodily out of the seed. The blade of the cotyledon remains within the nut forming a sort of arm of attachment point of the projected embryo elongates and forms the roots, and from a slit in the cotyledonar sheath the plumule or stem makes its appearance The "three holes" on the nut are all close together, not "opposite" as in But Mr. Treloar prothe above description and are only spots not holes

VIII Cevion 1539

ENEMIFS TO THE COCCA-NUT.

It is commonly stated that if the soil be too rich a large grub with a reddish-brown head soon finds its way to the roots and into the stem This eats its way through the tissues until the leaves turn yellow, the terminal bud withers, and the tree is killed. This appears to be the beetle known as Butcera rubus. "In the Straits of Malacca, the chief natural enems of the tree is a species of elephant-beetle, which begins by nibbling the leaves into the shape of a fan, it then perforates the central pithy fibre, so that the leaf snaps off, and lastly, it descends into the folds of the upper shoot, where it bores itself a nest, and, if not speedily extracted or killed, soon destroys the tree. A similar kind of beetle is known on the Coromandel coast, and is extracted by means of a long iron needle or probe, having a barb like that of a fish-hook. By using this and by pouring salt or brine on the top of the tree, so as to

1540

1541

1542

| 420 | Dictionary of the Economic |
|--|--|
| cocos nucifera | The Cocoa-nut Palm: Coir Fibre. |
| CULTIVA- TION 1543 | more formidable is the corroominyo beetle (Butocera rubus), which waits to pierce the tender trunk near the ground, and to deposit its eggs in the cavity whence the young grubs, directly they are hatched, begin to eat their way up through the centre of the tree to the young leaf-ends at the ted by might be the control of the tree to the young leaf-ends at the ted by might is |
| 1545 | e and |
| сим 1546 | GUM. The stem of this well-known tree is in Taheiti said to yield gum. It forms large stalacitic masses, red-brown, translucent or transparent |
| | (Spont Eucyel) Cooke, in his report on Gum and Gum-resurts, says that this gum was sent to the Madras Exhibition of 1855 from Transacore. No other author appears to allude to this gum however, and it therefore, seems probable that if produced it is met with only in certain localities. The writer cannot recollect ever having seen a gum adhering to the stems of the palm. |
| DYE | DYE |
| 1547 | "In a patent obtained by Mr. J. H Baker (No 5139, March 29th 1825) the whole or every part of this tree is claimed as a dye-wate, especially the high enclosing the fruit, and the foot-stalks of the leaves. The dye was to be extracted by water, cold or boiling, or by solutions of line, potash, ammonia, Ac, and was to serve for dyeing mankens, blue-blacks, &c. The infusion was likewise to serve as a substitute for nut-galls in Turkey-red dyeing. The material does not appear ear to have come into practical use." (Crookes.) Mr. Liotard 3a3s of this die properts "Produces a dirty-brown," |
| 1548 | (khás) colour, and is a good deal used from its abundance. Lime and chaula are added as mortants." Drury remarks that "the shell when burnt yields a black punt which in fine powder and mixed with chinnam is used for colouring walls of houses." Cocoanut oil is frequently employed in certain processe sulphate of iron colour to silk pose of the coc |
| 1549 | special properties that assist the functorial actions The natives of India generally do not seem to be aware of the dye properties. The milk is, however, said to be used by plasterers both in India the or colour-washes it |
| 1550 | cements (see No. 1625 |
| COIR FIBRE 1551 | COIR FIBRE. The thick pericarp or outer will of the fruit yields the valuable coir FIBRE of commerce. The SHEATHS of the leaves are used to wrap up |
| Leaf-Stalks. IS52 Tomentum IS53 Coir IS5‡ | articles, and as paper to write upon At the Colonial and Indian Exhibitaticles, and as paper to write upon At the Colonial and Indian Exhibitatical Attacks of Arterior Attacks of Arterio |
| | |

| | The Co | coa-nut Palm | Coir Fibre | * | cocos |
|------------|-------------------|----------------|------------|--------------------|------------|
| of this fi | bre is said to co | ome from the M | rlayalam A | yar (from the verb | COIR FIBRI |

and Matting Co, Highworth, Wilts, and Messrs W I Sly and T. Wilson of Lancaster, who were the patentees of improved machinery for making

quality of the fibre. - soil climate, and proximity to the sea being important influences. But there are other considerations. Certain varieties or cultivated forms of the cocoa nut are better suited than others for the

accurate system of steeping, beating, and cleaning the fibre, completes the manipulation calculated to produce the superior qualities of coir (Conf. with Mr Jackson's report in next para ! " The fibre appears in the market in various degrees of fineness, depending on the age at which the cocoa nut was cut and husked, and the care bestowed in steeping and cleaning" Mr. Treloar says. 'The usual indications are that the commoner and coarser fibre comes from the old nuts, and the finer. lighter quality from the new, but there are, of course, essential differences in the qualities brought from each locality, and the Cochin are usually the best " "Here let it be parenthetically but emphatically remarked that any attempt to give to cocon-nut fibre a furer line by the process of blea hing is to destroy its quality if it be good, and if it be of comm u quality to make it alm il worthless "

Properties of the Fibre and Season when Mature - "The Cochin has the PROPERTIES purest hue and tetches the best price ' On this account it has been custominy to imitate this by bleaching "Cocoa nut fibre is tough, elastic,

coin 1555

of the sea, but it will not stand bleaching. It gives up when confronted with sulphuric acid, chloride of tin, or any other chemicals which are

cocos nucifera

The Cocoa-not Palm Cour Fibre.

ROPERTIES COIR.

If cut earl er than this, the fibre is weak, if later it becomes coarse and hard, requires a longer soaking, and is more difficult to manufacture" Dr Buchanan Hamilton in his journey across Mysore states (1, 156) the green cocoa nuts are sold for their husks, from which fibre is extracted, but the husks of the ripe cocoa-nuts are commonly burnt for fuel (11, 50) At the same time immense quantities of apparently ripe cocoa nuts, in husk are sent to Europe, the corr from the hush being there separated, cleaned, and manufactured Mr Jackson of Ken, in the Planters' Garette, describing a visit to Messrs. Chubb, Round & Co's factors, gives an interesting account of the process of husking there pursued. He says "The enormous heap of husks-which, indeed is known in the locality

all the nuts are imported in the huck or outer covering, from which, on arrival, they are stripped by men using two fine-pointed steel chisel, and who, by constant practice, become so skilful in the art that many are able to open 1,000 to 1,200 nuts per day The nuts themselves after being removed from the husks are generally sold to wholesale fruit dealers, who, in turn, supply the the above passage Mr . new ideas India is not furnish cocoa nuts to Eng cocoa nuts is actually use , England attained a vast r apparently having been kept for years on the nut. These facts open

Honduras), all round the coast of America and the hip Island

up a new field of trade of which with a little assistance the Nicobar and Laccadive Islands in ght profitably and without fear of any rival hope to

enjoy a large share

Separation of Coir in India .- "The removal of the fibre from the shell is effected by forcing the nut upon a pointed implement stuck into the ground, in this way a man can clean 1,000 nuts a day The fibrous husks are next submitted to a soaking, which is variously conducted in some places they are placed in pits of salt or brackish water, for 6 to 18 months, in other places fresh water is used, but it becomes foul and injures the colour of the fibre. The ch ef point to be considered is the duration of the soaking, if it be continued too long, the fibre will be weakened, if it be curtailed, the subsequent extraction and cleans ng of the fibre will be rendered more difficult. The most approved plan of conducting the soaking is in tanks of stone, brick, iron, or wood, steam is admitted to warm the unter By this means the operation is rendered very much shorter, d manual The f other senaration of the

PARATION OF COIR 1556

SEPARATION

OF COIR.

COCOS The Cocoa nut Palm Coir Fibre. nucifera

cellular substance is separated from the fibrous portion. When on te clean it is arranged into a loose roving preparatory to being twisted, which is done between the palms of the hands in a very ingemous way, so as to produce a yarn of two strands at once"

"As the husk gets hard and woody if the fruit is allowed to become quite ripe, the proper time for cutting it is about the tenth month. If cut before this, the coir is weak, if later, it becomes coarse and hard, and more difficult to twist, and requires to be longer in the soaking pit, and thus becomes darker in colour When cut, the husk is severed from the nut and thrown into soaking pits These, in some of the islands, are merely holes in the sand, just within the influence of the salt water Here they lie buried for a year, and are kept down by heaps of stones thrown over them to protect them from the ripple. In others, the soaking pits are fresh water tanks behind the crest of coral. In these, the water, not being changed becomes foul and dark coloured, which affects the colour of the corr When thoroughly soaked, the fibrous parts are - it taken out of the pits too

ies, if left in too long, the with that soaked in fresh

In the Maldives (neighvernor of Ceylon) cocoa-

nuts are very plentiful, and enormous quantities of both the nut and the fibre are exported to India and Ceylon (See the further paragraph on trade in nuts)

From what has been said in an early paragraph regarding the cultiva-

som-shoots for the manufacture of paggery during the first two years of its production after which it may be discontinued." In the Konkan the opinion is held that "if tapped the trees become unproductive much sooner"

of numer are he fibre a he off the or hed

successfully prosecuted in the reclamation of salt-impregnated lands where

| 430 | Dictionary of the Economic |
|--------------------|--|
| cocos nucifera. | The Cocoa nut Palm Colr Fibre, |
| | nothing else would thrive (Gen Admin Report, p. 95) A curious faction regard to cocoa nuts grown on salt marshes is conveyed by the |
| | beetle, and are found to bear much sooner than those planted in a sandy soil" (p 182-83) |
| TRADE IN COIR | INTERFSTING FACTS CONNECTED WITH THE TRADE IN INDIAN COIR (Conf. with p. 435) |
| 1557 | Although as suggested, the better class fibre is most likely not pro- duced where tapping for the juice is practised, still it should not be tor- f from stile- frendy |
| | Tochin a mere commercial term for all good coir wherever obtained. In the Indian regions alluded to above, cocoa not cultivation is prosecuted to a considerable exten. Of Cochin, Madras), it may be said, corr is perhips to considerable exten. Of Cochin, Madras), it may be said, corr is perhips Shortt (in his Monograf) of eyene from that Native State, but Or mention Cochin corr. He Laccadives, Amindia, K. |
| | the passage quoted above Round & Co do not, it would seem, use any Cochin fibre but prefer a |
| | husk In of the corrundust town The sering are sending 1860-t five years |
| | •• |
| | This idea is borne out by the statement made by Royle that "the Lacedure Islands are famed for the good quality of the core which is made there and exported to the Malabar coast." Again, speaking of the peculiar form of the palm grown in the Island of Kiltan, Royle observes "Il requires no attention and comes into bearing early. The tree is not so |
| | |
| | quilt ripe if iow har the exports of confiron the Malibar to by the South by the south of the so |
| | stitutes the re |

c. 1557

cocos

| The Cocoa net Palm C | our Fibre. | | nucifera |
|--|--|--|----------|
| Government on account of the islands whas been made for many years in the priment for the corr produced in the island man for the corresponding to the island of the produced in the island of the produced in the island is sent from the Luccidives to Malabar, so the subject of how far the junce-extracting much the preparation of fibre cannot be defined in the preparation of fibre cannot be defined in the preparation of the cannot be defined in the preparation of the cannot be defined in the preparation of the preparation o | ce which is g is attached to of specify the hat the some dustry of the | iven by Govern- Kánara "The amounts of corr what interesting coast is combined | COIR |
| IMPORTS of coir (manufactured and i | ınmanufactur | ed) into Madras | |
| from other Indian ports- | Cwt | R | 1558 |
| 1884-85 | 14 745 | 95,884 | 1 |
| 1856-87 | 13,750 | 81,386 | |
| Lx1 orts to other Indian ports- | | | Exports |
| • | Cwt | R | 1559 |
| 1884-85 | 186,869 | 12,66,356 | 1 |
| 1886-87 | 178,228 | 7,98,255 | 1 |
| Turning to the tables that give the deta | als of these fig | gures, it is shown | 1 |

Malabar district alone that "the value of exported cocoa nut products is

that of raw or unmanufactured coir Madras receives none from British or foreign Indian ports, so that unless the Laccadives, which (as stated

estimated at nearly a mill on sterling annually.

In a previous page some indication of the extent of the Nicobar trade in cocca-nuts has been given. Here does not however, appear to be any trade in corr, although it seems possible that one of the inducements that

VIELD FFR NUT OF TIBER AND PRICE

YIELD O

Mr Robinson, in his Report on the Laccadizes, states that the difference in the qualitation in the standard sta

fine island n

2th of such y? tree, of which there are 14 to a bundle, averaging about a maund of 28th A

COCOS nucifera

The Cocoa-nut Palm. Corr Fibre.

PRICE 1561

Mangalore candy of 500b will thus be the produce of 5,600 nuts, and should contain about 20,000 futhoms of yarn. The actual price of cor received by the islanders is about Rij per candy. The value of the coir produce of a tree is calculated to be from 2 to 2\frac{3}{2} nnns, and that of the produce of 100 trees from Rij to 157. "The average value of the total raw produce of a tree bearing fruit would then be seven annas to half a tupee, and that of 1 plot of 100 trees R45." For the nuts which they export to the Malabra coast they get from R7 to 10 per thousand, or ruther 1,100, as 10 per cent is always allowed for luck in these sales. The islanders export from 300,000 to 400,000 nuts annually. The nature string the result of the 10 to 10 trees R10 to 10 trees the sales of the 10 trees th

into the Government go for at the rate of R21-1

candy of 640h. After t Since then the average price paid for a Mangalore candy of Ameendevy and Kadamat coir his been R20-2-0 (or R23 per Calicut candy of 640h). But for the Kiltan and Chelatt coirs, which are the best, an average of R20-12-7 or R23-12-0 per Calicut candy is paid. Up to A D 182-2-6, the Bombay and Bengal Governments took almost the whole of the coir brought from these islands, and credited the Mangalor Collectorate with R23 per candy. The price has since filten very much and the standards and the standards are considered to the the standards and the standards are considered to the controlled the standards and the standards are standards and the Morris, in his account of the Godavery district, Madras, gives the following brief statement regarding the production and yteld of cor-

"The cocoa-nut tree yields an excellent fibre The quantity of fibre

Dist 70)

Spons' Encyclopadia gives the London prices of corr as "Cochin-good to fine, £19 to £25 a ton, coarse, £16-tos to £19-15: Yarn-good to fine, £26-tos to £46 a ton, medium, £21-5s to £28-tos, common, £14 to £22 tos, roping, £18 to £24."

USES OF COIR 1562

1563

USPS OF COIR

"The fibrous busk of the cocannut is not its least valuable product, and gives rise to a very large trade, both in the East and in Europe At first it was only used in this country (England) for stuffing mattresses and cushions, but its applications have been enlarged and its vide greatly increased by mechanical processes, and in a small pamphlet sisued by Mr Treloar, more than twenty years ago, he stated that its natural capabilities having been brought out, corr has been found source for the production of a variety of articles of great utility and eight of workmrinkip—lable-mats, fancy baskets, and but mass made by stead of being formed into rough cordage only on mass made stead of being formed into rough cordage only on the fifther is ren-

textures and

ng for sheepfolds, pheasantries, and poultry yards, church cushions and hassocks hammocks, clothes lines, cordage of all sizes, and string for nutserymen

cocos

Cadians.

1566

Fronds

1507

| | nucifera |
|--|------------------|
| and others, for tying up trees and other garden purposes, nosebags for horses, mats and bags for seed-crushers, oil-pressers and candle-manufacturers, are only a few of the varied purposes to which the fibrous coating | USES OF COIR. |
| of the occount is now applied "Spinmonts, Trop. Agri. 22]. The uses of our a upon them to applied "Spinmonts, Trop. Agri. 22]. The uses of our a upon them in greater detail than indicated in the phases. To the natives of india it is invaliable as lasting in a damp climate. It is accordingly universally employed in tying the bamboos used in the construction of their hist. | 1564 |
| FIBROUS SHEATHS OF THE LEAVES AND COCON-NUT COTTON—A brief reference has been made to these in an early part of this article. The finer ones are used as filters and severs, but the coarser are apparently put to no purpose, although they have been proposed as suitable for papernaking. They might be used to strengthen saddlery, and even for laddes' corsets and splints. Knox says of Ceylon that "the filaments at the | Sheaths. 1565 |
| | |

flabelliformis (B 680) This is sometimes collected and used by the natives to stop bleeding from wounds. A good sample of it was shown at the Colonial and Indian Exhibition

CADANS —" The leaves are planted into mats and screens and also made into baskets, and combs are said to be made of the midrip of the leaffest in the Frendly Islands. In the Laccadive Islands mats are made of the cocon and leaf. These mets are of fine quality and much esteemed the exported. In the islands they are employed for the sails of the smaller busts." I he Singa.

boats" 'I he Singa neatly, so as to make

they form the usual the Europeans"

for fuel, their midribs, tied together, are sometimes used as brooms for the decks of ships, as the fibres of the stalk are woody, britile, and difficult to clean " (Royle)

COLLECTIVE TRADE IN COCOA-NUT PRODUCTS.

enters so largely into the drily life of the people, that little or nothing can be accertinated of the actual consumpt on The returns of road, truer, and rail traffic throw some light on this, and the coasting trade affords another means of arriving at an approximate estimate of a certain proportion, but even these returns fall far short of establishing 1 tangible conception of the total local consumption. Wherever the palm grows,

COCOS nucifera.

Trade in Cocoa-nut Palm Products.

TRADE.

growth of the trade in the cocoa-nut palm it will not be necessary to go further back than the year 1850. Royle, in his Fibrous Plants of India,

the following statement :-

All published Imports and Exports for 1850.

| | | | | | | | | | | Imports. | Exports. |
|-------------------|----|---|---|---|---|---|-----|-----|----|----------------------|-----------------|
| Nuts . Kernels | | | | | | | | | | R 5,24,889 | R 10,140 |
| Coir and ro | pe | : | : | : | : | : | : | : | : | 8,66,120 2,31,934 | 4,31,008 |
| Oil . Shells | : | : | : | : | : | : | : | : | : | 76,648 5,970 | 1,51,843 Nil |
| Cadjans | • | • | | • | | : | : | | - | 2,990 | Nil |
| | | | | | | | Tot | TAL | ا. | 17,08,551 | 8,77,505 |

This gives a grand total of Ra5,86,06; that is to say, less than the foreign imports of last year. To compare with the above statement of TOTAL TRADP, the following table of the PORPION TRADP for 1886-87 (exclusive of all internal and inter-provincial or coasting traffic) may be given:—

Foreign Imports and Exports for 1886-87.

| | Imports. | Exports. |
|--|--------------------------------|---|
| Nuts Copra (or kernels) Copra (or kernels) Coir (unmanufactured) (namaliactured but exclusive of ropes) TOTAL | 11,76,799 6,839 1,50,701 | 8,462 79,836 77,391 19,14,448 13 24,589 |

ly, lia 's, where of coasting lidely

ın-

whereas in 1850 (removing approximately the items of coasting trade)

Rnopro la commercial name for the Rel nels playe Lillian Ladaca the past forty years How far the returns of foreign trade can be accepted as an indication of total trade may be learned from the following statement

nucifera.

| of the values of the coasting trade in cocoa nut products during the year 1836 87 — | | | | |
|---|------------------------------------|---|--|--|
| Coast ng Trade in | Imports | Exports | | |
| Nuts Kernels (copra) Cor | 24 21 941 35 31 15 12 20 749 | # 16 88 773 23 00 958 9 27 302 | | |

The table furnished by Royle for the trade in 1850 pract cally corre

TOTAL

33 872

illustration one item of this internal tride Bengal sent to Assam in 1833 84 cocoa nuts to the number of close upon 1 vo m ll ons valued at R69 000 In a 1 ke n anner Bombay mports cocoa nut products from Madris Ceylon Zanzibar, &c and d stributes doubtless a large pro

poducto Liven with this has been done a very in perictioned. The have been obtained of the value of the tree to the people of Ind. a. The mere returns of tride cannot give a just concept on of the importance of a product which like the cocoa mut to a living oppulation my be said to be the fourte of wealth as well as the food drink, and occupation

TRIDE IN COIR, MANUFACTURED AND UNMANUFACTURED

In all the returns of this subject care is taken to explain that these do not include ropes—cor ropes and cords being placed under a general head my with all vegetable cords.

I the exports of Raw Coir are however, so insignificant that a false.

impress on is I kely to be conveyed. The so-called manufactured corr, which f gures extensively in the returns, appears to be largely crude

1568

| 436 | Dictionary of the Economic |
|-------------------|--|
| COCOS nucifera | The Cocoa-nut Palm. |
| TRADE | corr yarn which is dressed and employed by the European manufacturers, but of course a considerable trade is also done in mits, rugs, car pets, and other such manufacturers. Glancing at the figures of the foreign trade in Coir (ummanufactured), the trade would seem to have practically remained stationary for many years past, and to be too small to justify the conclusion that India participates anything like to the extent it might in meeting the home market. The exports have averaged from 10,000 to 15,000 cwt for the past twenty years they were last year 13,347 cet. |
| Ì | • |
| 1 | |
| | exported 15 586 cwt and imported only 300 cwt, Bombay exported 1 cst 1 cst 1 upplies Of the cwt of 35 cst 1 of Mauractured Core (excluding ropes) India imported last 1 of Mauractured Core (excluding ropes) India imported last 1 cat (18,709 cst.) valued at R1,50,701 and exported 208,022 cst.) with R19,14,448 Of the imports, Ceylon sent 17,657 cst. of which Bengal re- |
| | |
| | |
| | irom one province to another were—imports 150,395 cwt, valut a at land to the control of these, adras adras adras and the control of the cont |
| | sent to other |

mainly concentrates in the Maaras I residency

Coir Ropes

Nothing can be learned as to the extent of the foreign and in ternal trade in coir lopes and cords, since the trade returns for these are published jointly with those of all other ropes. It has been said, how ever, that corr string is universally employed by the natives of India in the construction of their bamboo huts. For this purpose alone, the consump-

ports 112,642 cwt, and Bombay, next in importance, exported only 21,647 cwt Of the total coasting trade in imports (vis 150,336 cwt)

C. 1569

COIR ROPES.

1569

The Cocoa nut Palm Cor Rope.

-

cocos nucifera.

OIL

1570

no f 11. COIR ROPES.

It is, however, better suited for running riggings its lightness being taken advantage of In the British Manufacturing Industries (on Fibres and

across the path, some of these were made of core.

011...

The sheed kernel, dried at ordinary temperatures, either in the sun or artificially, contains from 30 to 50 per cent of oil. The method of extracting this oil in Indi: is as follows. The kernel and soueczed in a press

the off is found to rise to express the office of the offi

In ndles and soap hen fresh, and fc and when fresh and when fresh

Regions where Oil is Produced — While in the above sentences a brief abstract has been given of cocon aut oil it is necessary to deal with this subject in greater detail. Enquiries are frequently addressed to the Government of India by merchants interested in the trade in this substance, so

cocoa nut oil industry is that written by Lfeutenant H. P. Hawkes and published in 1857. Grzetteer writers have contented themselves with

| cocos nucifera. | The Cocoa-nut Palm: Its Oil. |
|--------------------|------------------------------|

OIL.

treating the subject as too well known to call for any detailed description, and at most only the meagrest accounts have been given. To the

and spirits may be prepared. We know that in Bombay the juice is largely extracted from the tree, that in Mysore the fibre is the chief preparation, and that in Madras and Trivancore enormous quantities of both fibre

from the same trees or even prepared by the same cultivators—certain plants or port ones of the plantation being periodically set apart for these several industries. Under core fibre it has been said that the green or unique cocoa-nut is alone used for that purpose, while most writers seem to agree that the ripe kernel is necessary for the oil. It would be most instructive to know it cultivation had resulted in the production of certain races of cocoa nuts famous for their oil-yielding properties, just as the inabatiants of the Laccadule Islands appear to hive developed a small-fruited one with a specially good fibre. In connection with commercial reports on cocoa nut oil it is generally stated that the finest qualities are obtained from "Cochun" (Spon places Cochin alter Ceylon). It

tut con Prr of gre

peculiar cocoa-nut that would seem to be inferior to the Malabar either as an oil yielding or an edible nut. The imports from the Malabre and Nicobar Islands into Madras are very unimportant as compared with those recorded against Bengal, yet Midras, and not Bengal, appears to control

ledge of at present, or that a large proportion of the coast occoa nuts or those of certain localiuse only are always or period cally set apart for oilyielding. It may, of course, be the case that the trees are, so to apeak, pruned by the removal for cour of so many green nuts from each tree, the remainder being allowed to ripen for oil purposes or as articles of diet

This brief review, from want of definite information, may be accepted and cating the direction that future reports might assume, but it may safely be concluded that, as with conf, so with coco a nut oil, Madras is the

| The Cocca-nut Palm: Its Oil. | COCOS nucifera, |
|--|--------------------|
| chief seat of the trade Certain writers familiar only with Bengal (with | OII |
| • | |
| | |
| · · | 1 |
| on the Madras Presidency. Mode of Preparation of the Oil — The ripe kernel is cut out of the shell in various ways, and either dried by exposure to the sun or by artificial parts, it is to be a sun or many and the parts, it is placed to the sun or mats, and when they are exposed to the sun or mats, and when the top the dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." Balfour remarks: "The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to pressure in an oil press." The dried are subjected to the su | 1571 |
| 1 90 | 1572 |
| , | 1573 |
| | Khobrel. 1574 |
| Bile All I file velle all ell | ' |
| seet story fres story fres story fres are then put in a copper vessel over a slow fire, and after boiling are squeezed; sometimes instead of boiling them the scrapings are | Avet 1575 |
| in water. The pieces are then crushed in water and the whole is again boiled over a slow fire, when the oil rises to the surface and its skimmed off." It is worthy of careful observation that practically the difference between doel and muthel oil is, that the former is mide from fresh kernel instead of from copica. Dr. Shortt says: "Boiled oil is obtained by bruising the kopica or the fresh cocosinut, mixing it with an equal quantity of the short of the first cocosinut." | Muther 1576 |
| is com- Two In air-oi, and is supposed, for that purpose, to be superior to oil obtained from | 1577 |
| copra Hawkes says of the hot expression oil; "When required for eduble nurposes, the kernel of the fresh put is taken rasped and mixed | 1578 |
| with a little boiling water. This yields by pressure a milky fluid C. 1579 | 1579 |

cocos nucifera.

The Cocoa-nut Palm · Its Oil,

OIL.

which, on being boiled until all the water has evaporited, produces a clear edible oil. Only just sufficient water to moisten the pulp should be added, as a larger proportion prolongs the operation and deteriorates the product. When fresh prepared, this oil is compriatively free from smell, but speedily acquires an unpleasant odour; mny attempts have been made to divest the oil of this smell, which renders it inapplicable for the perfumer's use, but only with partial success? "Nearly every writer describes a different mode of preparing the oil obtained by the lot most process. The reader is referred to a further page where this subject will be found to be dealt with under the head of The Oil as a Medicine.

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pose or other

In the Jury Reports of the Madras Exhibition interesting information regarding the extraction and yield of occoanut oil has been recorded "Half a hundredweight of the dred kernel is a charge for a full-size checke" (or country mortar-like oil-mill), "and a pair of stout well-fed bullocks will get through four such charges in a day, so that twenty mills are required to get through but one in the twenty-four hours. The man who drives has usually a boy to assist him in taking the oil, which is got

1580

the kernel burn brilliantly

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In Spons' Encyclopedia it is stated that "Its principal latity acid is jurios'earce, together with olese, palmic, myristic, and some others of less importance all combined with glocerine." One of the most remarkable fear

1581

1581

| The Cocca-nut Palm Its Oil. | cocos nucifera. |
|--|--------------------|
| tures of this oil is that it will take up a larger amount of water than any other commercial oil. This makes it eminently suitable for soap-making, and but for the smell which such soap leaves on the skin the oil work. | OIL |
| be even more extensively employed by the soap-maker than it is. Industrial and Domestic Uses of the Oil—This oil has now for many years been largely used in the candle trade Messrs Price & Oo intro- duced in 1840, on the occasion of Her Myesty's marriage (when for illu- mination a cheap self-smilling candle was required), a new composite | CANDLES 1582 |
| immident between season to the control of the contr | |
| Of no less importance is cocoa-nut oil to the scap-maker. "It forms a hard and very white scap more soluble in salt-water than any other | 50AP. 1583 |
| | |
| water, it combination with stitute or social and other substances, and yet | i |
| | |
| | |
| vegetable butter, is capable of taking up a larger percentage of water—and still forming a hard soap—than any other known fatty matter. The soap made from it, moreover, is more soluble in saline or 'hard waters, ''e ven sca-water, and from this reason it has, long been much into soap called marine soap for use on board ship.'' The odour which it imparts to the reason that water the soap for use on board ship.'' The odour which it imparts to the resembles that of infants women. On this account it should never be added to the ingredients used in the manufacture of a toilet soap. It does not readily saponify with caustic soad leys by itself, but does so readily when | |
| mixed with tallow or palm oil A large among of the amond | 1584 |
| : | |
| sively used medicinally Prices and Yield of the Oil -Speaking of the year 1854 Hawkes | TERe |
| | |

January 1955 was £46 10s per ton, the average being from £46 to £48." | C. 1585

1 000.180 Kaj-

| 442 | Dictionary of the Economic |
|--------------------|--|
| cocos nucifera. | The Cocoa-nut Palm: Its Oil. |
| OlL. | v of there necessarily may however, be accepted as somewhere between 30 to 50 per cent. However, be accepted as somewhere between 30 to 50 per cent. However, be accepted as somewhere between 30 to 50 per cent. However, be accepted as somewhere between 30 to 50 per cent. However, be accepted as somewhere between 30 to 50 per cent. However, be accepted as somewhere between 30 to 50 per cent. |
| 1586 | TRADE IN COCOA-NUT OIL. Royle remarks that the imports into Great Britain of cocoa-nut oil were in 1850, 98.039 cwt., of which India furnished 85.096 cwt. Hawkes states: """ And the la have been dead of the remarks that the india furnished 85.096 cwt. Hawkes states: """ And the la have been dead of the remarks of the cocoa-nut oil trade almost entirely centred in Madras, so that the passages may be taken as approximately indicating the extent of the foreign demand for the oil forty years are in 188-93 the foreign exports demand for the oil forty years are in 188-93 the foreign exports of the foreign control of the collection of the collection of the foreign exports of the foreign export |
| | t 000 t80 val- |

oorts were 1,942,809 valued at K20,74,455 incidence of India, onte of R20,60,067; the exports were 1,942,809 valued at K20,74,455 AF 41 . ---

coastwise imports were unimportant. Local production added to these imports would constitute the supply from which the exports could be made, and in the case of Madras it is noteworthy that that presidency imported

att..

The Cocos-nut Palm · Its Oil, COCOS nucifera.

nd to prevail, allons and in il production in these presi-

dencies. Cocoa-nut oil is thus a speciality of Madras trade

COPRA OR DRIED KERNEL

A very imperfect idea of the supply and demand for this oil would, however, be conveyed were we to omit to examine in this place the trade in copra or dred kernel, the substance from which the oil is expressed. This is largely exported to foreign countries and sent from one province of India to another to be locally made into oil.

copra 1587

| | | Ī | 1884-85 | | 1885 86 | | 1886-87 | |
|--------------------|---|---|-------------------------|----------------------|--------------------------|-----------------------|-------------------------|--------------------------|
| Imports Exports | : | : | Cut 39,653 64,323 | 2.95,685 5,34,291 | Cwt 105,296 21,755 | 10,20 841 1,86,800 | Cwt 125,222 9:337 | # 11,76,799 79,836 |

The imports come chiefly from Ceylon and the Straits Settlements, and are almost eculusvely delivered in Bengal and Bombay, only very small amounts being received by Madras. The exports, on the other hand, go mainly from Madras (8,135 cut of last year's exports) Bombay being next in importance The greater part of these exports (7,149 cut) go to Portogal, Peria, Ceylon, Russia, and Arabia, each receiving from 300 to 500 cut. So lat for the foreign traffic. The imports and exports constitute were 47425 cut of the state of the total imports by obtaining traffic were 47425 cut of the state of the total imports by obtaining traffic were 47425 cut of the state of the total imports by obtaining traffic were 47425 cut of the state of the state of the total cut of the control of the control, Madras sent to other Indian ports 182 500 cut. Bombay 55,205 cut, Bengal exporring of the control of the exports, Madras sent to other Indian ports 182 500 cut. Bombay 53,205 cut, Bengal exporring

OIL-CARP or PUNAC —Before passing from the consideration of cocoanut oil it is necessary to say something about the oil-cake. This is viewed as an exceedingly valuable manure, especially to cocoanut palms grown inland. It is also largely used to fatten fouls, pigs, cows, and other

OIL CAKE. 1588

| | • • |
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| COCOS nucifera. | The Cocoa-net Palm as a Medicine, |
| | animals It is sometimes exported to Europe In Madras it sells for 3 to 4 maunds (of 25th) per rupee |
| MEDICINE | MEDICINE. |
| Fruit 1589 Flowers. 1590 Oil. 1501 Spike. 1592 Leaves. 1593 | The DRFFY IRUIT is given as a refrigerant, the FLOWERS as an astrongent, and the out employed as 1 substitute for cod-liner oil. The milk of the mut, the purce from the PLOWERS SPIRE, and the tomentum from the LEWYES are all used medicinally |
| Water. | |
| 1594 Edible Pulp. 1595 | SCIOLUM. LIP ENIBLE PULP AND THE MILK PREPARED THERSEROM—The |
| | · |
| | y have for it. |
| | , |
| | S |
| | 1 5 |
| | • |
| | i i |
| | nusseus pargaines (**narm ina *47) The following is a prescription known in Hindu medicine as Narikla- khanda "Take of the pounded pulp of cocoa nut hill a seer, fry it in 8 **water **sper, typer, typer, typer, |
| | · · · esna |
| | fetrea (naga kesara) I fola, each in fine powder, and prepare a contection, Dose 2 to 4 folas in dyspepsia and consumption "UC Duit, Hind Mat Med., 248) |
| Shell | m c rephunt |
| 1596 | |
| | f |
| | \ · · · · · · · · · · · · · · · · · · · |
| | , |
| | |
| 1597 | |
| | by a surgeon in Senegal the result was complete -Natal Mercury' |
| | (1707 Agri, 1002-03) |
| 1598 | (Trop Agr., 1883-83) THE OIL—A reference to the account given of the ordinary ol in the Thina on or ker. |
| | |

| The Cocoa-nut Palm as a Medicine. | COCOS nucifera |
|--|--------------------|
| tit , The and an Halvel and and miller & fourth | MEDICINE |
| است و در د م | Shell-011. 1599 |
| | |
| only used medicinality, the most community statements. Have now your principle both as to "The "A very cheep, hard, white of some of s | |
| | 1600 |
| olene obtained by pressure refined by being treated with alkales, and then repeatedly washed and distilled with water." The therapeutic pro- | |
| | 1601 |
| | |
| | 1602 |
| | |

much used as a loca' fevers and debilitating vermifuge in Jamaica sugar, in flux. An

| cocos nucifera. | The Cocoa-nut Palm as a Medicine. |
|--------------------|---|
| MEDICINE | and pulmonary diseases generally Pound the kernel with water, place it to cettle, and skim off the cream This is preferable to the expressed oil" |
| 1603 | "Cocon nut oil was proposed by the late Dr. Theophilus Thompson (Protend of Rynt) Scienty, 1854; Pt. III., p. 4, pl. as a substitute for cod-lever oil; and in this character it has been favourably noticed by Dr. J H Warren (Botton Med and Sing, Sourn, 1964, MI, p. 37) and others. The substance used in these cases was not the ordinary commercial oil, but the cleine obtained by pressure from the crude oil in the solid state it is met with in England), refined by being treated with alkalies, and then repeatedly washed with distilled uster. In his Lethomann Lectures Dr. Thompson gives the result of his treatment with this agent in 53 cases of phthiss. Of the first 30, 19 were much benefited, in 5 the disease remained stationary, and in the remaining 6 the disease continued to advance Of the second 32, 15 were materially benefited, 3 remaining stationary, and 5 became worse. Dr. Garrod (Brit and For. Med Clin Rev. 750 is 1865) has shown that it exercises a marked nilluence, almost equal to cod-liver oil, in increasing the weight of the body. In Garrod, and also by the Editor, who instituted some trials with it, is, that under its prolonged use it is apt to induce disturbance of the digestive organs and diarribota. Its use is favourably noticed in the Report of Drs Van Someren and Oswald, and Mr. J. Wood." (Pharmacoyana of India) Dr. Dymock says cocos-nut oil has been tried in Europe as, a sub- |
| Juice: | stitute for co general use with disady and induce formed by some writers regarding fact that nearly every author descrit and consequently that it is possible many different substances or a sub- stance in many stages of purity or impurity may have been experimented against the bite of poissonous replies The Jurica—The freshly-drawn jurica is considered refrigerant and durente, and is valuable as a preparation known as toddy poultice (see half the property of |
| Husk. 1605 | (Lymunk) stade Scrarings of THF HUSK isse and heal them rapidly if application was proved by the case of two bad ulcers occasioned by the bite of a negro's teeth. The young roots boiled with ginger and salt are efficacious in fevers, the same as the bamboo "(Rovie). |

Tomentum. 1606 young roots boiled with ginger and salt are efficacious in fevers, the same as the bamboo " (Royle)

THE COTTON OR TOMENTUM —"This is a soft, downy, light-brown-coloured substance, found on the outside of the lower part of the branches

THE COTTON OR TOMENTUM —"This is a soit, down; ight branches coloured substance, found on the outside of the lower part of the partially of the cocoa-nut tree, where they spring from the stem, and are partially covered with wh
the coco in the coco in the coco in the stem in the coco in the coc

tree The coco tis
blood, incases of admirably fitted t
with tomentum of conjugations and or posses, a
under Tinder)

| The Cocoa-net Palm as a Medicine- | cocos nucifera. |
|--|--|
| THE FLOWERS —Are sometimes used medicinally, being said to be astringent | MEDICINE. Flowers 1607 Nuts. 1608 Roots 1609 |
| in sore-throat The Asies —"The asies of the leaves contain an amount of potash, they are used medicinally," The Bun — The tender buds of this palm, as also of Borassus and Phænix, are esteemed as a nourishing, strengthening, and agreeable vege- table. Special Opinions —§ "The husk of the fruit of the Cocos nucifera is | Ashes. 1601 Bud. 1611 |
| used in the treatment i of male fern when tak W Nolon M D, Bomba acutdy and gastric tritiati ed as a local application B A, M B, Monghyr) eczema of the scrotum ing 1s a popular dome | ' |

| give is from 20 to 30 | , . | J- 1 | hrice |
|----------------------------------|----------|------------------------------|-------|
| daily An ash is prep | | | which |
| is a valuable ant-acid | | | ' A |
| sweet extract is also | | | oses" |
| (Civil Surgeon R L D | | | ained |
| from this palm is very refreshir | ng and p | ossesses lavative properties | 1ts |
| L~ 1, v , | -8 r | | |
| | | | |

(A Cital Surgeon) "If the flowers are mixed with sugar, the root of khus-khus, and white chandan, with a little water, the combination will be found good in bihous fever, will check comiting, and produce a cool ng

| 71- | |
|------------------------------|---|
| COCOS nucifera | The Cocoa-nut Paim · Its Edible Products. |
| MEDICINE. | sensation" (Civil Surgeon William Wilson, Bogra) Useful "in dyset tery, character menortheea, and stomatus" (Native Surgeon T Rithin Modelliam, Chingleput, Mairas Presidency) "C. mamiliara Mairas Consensation of C. mamiliara du cocoa-nut tree, Pemba, East Africa frut large, smooth, distinctly three cornered pinksish yellow when npe: without the fibrous pencarp of the common eccor-nut. Yields very little oil, but supplies a refreshing drint in fevers and in hot weither, and is said to produce free duriesis use when the nut is full grown, but before it begins to ripem. Yeri. of East Africa Music C. mucilera, Musicy-P Pembry, C. mamillans (Surgeon Major John Robb, M. P. Surat, Bombay Presidency). |
| FOOD | FOOD PRODUCTS. |
| | Under the head of food products obtained from this palm we may |
| Cocoa-nut Cabbage IÓI3 | he tree |
| Young Cocoa- nut 1614 | Young Coco :- nut (Vern dab) — This is the tender fruit, plucked off the tree for the cooling, sweetish, clear water, and the soft, cream-like pulp contains. The water is drunk and the pulp eaten by natives of al classes. |
| Mature Cocca-nut. 1615 | Mature Googa-mit (VERN phina norkel)—Thus is the fruit in its mature state, with its outer, thuch, fibrous covering completely dried. It contains less water, but has a thicker and harder albuminous layer than the tender fruit, when dried this albuminous substance is known as copra. It is eaten with parched rice, or rasped and put into curries or made into sweetenests. Copra is either allowed for irpen and dry within the shell, when it separates naturally and is removed entire, or the shell is broken and the copra cut out and dried either in the sun or over first former exists in large pear-shaped pieces smaller than, but of the same shape as, the interior of the nuit, and is known as "natificial copra." An oil is extracted from coprawhich is employed for various cultary purposes, and is also exported to a certain event. |
| Juice 1616 | · |
| Root 1617 | in pan |
| NUTS 1618 | The above is a brief abstract of the food products of this palm. The extent to which the unipe first is cut, the water and unitipe kernel being consumed and the husk made into colf, may be partly inferred from what has been already said regarding the fibre. To a large population in |
| TRADE In nuts IGI9 | and coasting trade in these nuts, as recorded in Mr J E Cool s |
| | idia Ion |

The Cocoa-nut Palm: Its Edible Products.

cocos nucifera

1,13,831, and East Africa 627,346. Of these imports Bengal took 83,03,230, valued at R1,375,553, Barma 5,618,939, valued at R3,72,702, Bomboy and Madras each received 700,000, and Sind 86,800. Bengal exercted no concanuts to foreign countries, but Bombay and Madras each each allow 150,000 to Egypt, Arabia, and Turkey in Asia. The foreign tended in ripe coccanuts is therefore very unimportant, and but foreign tended in ripe coccanuts is therefore very unimportant, and but for the Maldiwes being viewed as foreign territory (while the Lacadives and Necobart Islands are not), it would be scarciety worthy of notice. It is noteworthy that India at present takes practically no part in meeting the

TRADE IN NUTS

Of the coastwise exports in 1886-87 Bengal sent to Burma, according to one official table of coastwise trade, 1,676,773, but according to another

into Burma alluded to above

2 (2

luics FROM THE COCOS-NUT.

Dr. Hugh Oleghorn has described as follows the process of tapping the palm for its juice in Madras—a process which is essentially that followed in Blombay and other parts of the country- this palm is not tapped in Bengal. When the spathe is a month old, the flower-bud is considered sufficiently, juvey to yield a fair return to the (Sárán).

JUICE Madras. 1620

the cut end of the spathe to crush the flowers thereby exposed and to determine the sap to the wounded part, that the june may flow freely. The stump is then bound up with a broad strip of fibre. This process

| cocos | Dictionary of the Economic | | | | | |
|----------|---|--|--|--|--|--|
| nucifera | The Cocoa-nut Palm Toddy. | | | | | |
| JUICE | is repeated morning and evening for a number of days, a thin layer | | | | | |
| | | | | | | |
| | | | | | | |
| j | | | | | | |
| | A single spaths will commut to yield today for about 4 month, during which time the Sanfr mounts the free twice a day and empires the june into his cropetly (a see all and a see a | | | | | |

apour a qualiti of a measure per tree. The rengin or time a use

Bombay, 1621

to the returns the writer has had access to, there are some 33 million frees in Bombay, of which about 30,000 to 40 000 are tapped for their junce

> LUIU oddy vern-

in Malabar and Deogad 23d (1 anna 8 pie) a month or 2s 6d (141) a year on each tree tapped. Under the new system a special license is granted to tap trees, at a fixed rate for each tree, and under certain conditions as to the number of trees included in the license. The licensees o-keepers truce of

64 (12

st of fuel and it as to make dood to the lidhor shop weeker ha * . The tabe

| The Cocoa-nut Palm · Toddy. | cocos nucifera |
|--|-------------------|
| ping tax he had paid to Government Government levies from the toquor shop keepees £60 (R600) a year for every hundred trees tapped Three fourths of this the luquor-shop keeper pays, the remaining fourth he recovers from the Bhanddar who supplies the luquor The Bhanddar's share of the tax amounts to £15 (R125) on one hundred trees for on each tree a monthly tax of £15 (R123) on the one hundred trees, or on each tree a monthly tax of £2 (annas) In Ratingers the from each tree In (12 seers) of junce a seldom sold fraw m is seldom sold fraw m is to the liquor-shop keeper With the wages of an assistant the monthly charge for distilling the produce of one tree is about 2 d (12 to 12 to 12 to 13 to 13 to 13 to 13 to 13 to 14 to 15 to | Zaice |
| · . | |
| | Spirit |
| 300 trees he makes a fairly good income. Of Ratingers, it is said, there are ordinarily three kinds of palm spirit, known respectively as ran, phal or dharts, and phens ran being the weakest and phens the strongest. In some places a still stronger spirit called drawas is manufactured. The average wholesale rates at which for the imperial gallon, piece, phul is 146 (8 avers 44 6)4 (12 c4). Bhandfars houses under fixed conditions as required, in proportion to the number of trees licensed to be tapped in the vicinity One still is usually ablowed for every too trees, and the still-pot is limited to a capacity of 20 gallons. | 1622 Phul |
| Fremented and Unffremented Beverage This is one of the forms of the so-called palm-wine so much extolled by the early European visitors to India From what has been said in the preceding pages regarded to India From what has been said in the proceeding pages regarded to India From what has been interest that, if left for a short time fifter removable for the high pages to India for a short time fire removable for the time to India India Fermentation is said to be prevented by the addition of a little lime to the fluid. The earther vessels into which it drains are generally powdered with lime when the fluid is to be drunk in its firsh unfermented state, or is intended to be boiled down to sugar or jaggery. It is also driven early in the morning instead of being left on the tree overday. Robinson- interest of the India for the India Ind | |

| 45 2 | Dictionary of the Economic |
|--------------------|--|
| cocos nucifera. | The Cocoa-nut Palm: Sugar. |
| PALM SUGAR | PALM SUGAR |
| Refined. | Instead of being fermented, the liquor may be evaporated down and its sugar thus extracted "Eight gallons of sweet toddy, boiled over a slow fire, yield 2 gallons of a lustrously-sweet liquid, which its called jaggery or sugar-water, which quantity being again boiled, the coarse brown sugar called jaggery is produced. The lumps of this are separately tird up in dired bannal eases." (Repl.) Dr. Shortt says. "The say is poured into large pots over an oven, beneath which a strong wood fire is kept burning, the lead fronds and other release of the plants being used as fuel. The sap soon assumes a dark brown semi-vised mass, well known as "", say the say soon assumes a dark brown semi-vised mass, well known as "", say the say soon assumes a dark brown semi-vised mass, well known as "", say the say soon assumes a dark brown semi-vised mass, well known as "", say the say soon assumes a dark brown semi-vised mass, well known as "", say the say soon assumes a dark brown semi-vised mass, well known to the say the say soon assumes a dark brown semi-vised mass, well drain, the watery portion or molasses dropping into a pan placed below. This is repeated, so that the jaggery or sugar becomes comparatively white and free from molasses. This sugars—for soit mass, the read the being collected in the form of molasses." Thus soon the say that the sugar is sugar, and weighs about 25 per cent of the whole mass, the read it being collected in the form of molasses. The sugar-for soit mass, the read as certain amount of cocon-nut sugar is regularly prepared. "The success of Dr. J. N. Fonsea (author of the Mistery of Good), in converting toddy of the cocon-nut sugar is regularly prepared. "The success of Dr. J. N. Fonsea (author of the Mistery of Good), an converting toddy of the cocon-nut sugar is regularly prepared. "The success of Dr. J. N. Fonsea (author of the Mistery of Good), an converting toddy of the cocon-nut sugar is regularly prepared. "The success of Dr. J. N. Fonsea (author of the Mistery of Good), an converting toddy of |

cally failed It is not known whether or not sugar to any appreciable extent is actually prepared from the Bombay palms, nor even whether a Than a arthen pot over a slow fire. It is worth recording that, according to the processor of the source in an earthen pot over a slow fire. It is worth recording that, according that according to the acc nombay, of

Of tapped.

48,500 of these occur in Kanara, 21,672 in Kolaba, and the remainder

ın Ratnágırı In a recent report on the trade in Indian sugar issued by the Resenue and Agricultural Department, no mention is made of palm sugar being

| The Cocoa nut Palm · Sugar. | cocos nucifera. |
|---|--------------------|
| prepared in Rombay, so that it may be inferred the trees licensed to be | PALM SUGAR |

| | | | | | | | | Acres |
|-----------|---|---|---|---|---|---|---|--------|
| Palmyra | | | | | | | | 24 900 |
| Cocoa nut | | | | | ٠ | | | 5,700 |
| Date • | • | • | • | • | | • | , | 1,600 |

The writer of that report adds "In 1881 85 and 1885 86 the area under cocoa-nut, date palms, and palmyras was 31,000 acres and 28,000 acres

ment in 1886 it was estimated that there were 7,7765 acres under that palm Taking the customary estimate of 100 trees to the acre, we arrive at the conclusion that out of a total of 7,776 500 trees, 570,000 were tapped, or

There exist sult the gr

made with the view to the preparation of the beverage. It would be instructive to know if the 5,700 acres of cocoa nuts in the above statement of Mad as are a 1 al 2 22 1 22 24 20 24

> re are sugar

nown* cocoa

om the as to

making, we went fully into the matter, receiving considerable assistance from Mr D C Amesekere, a proctor who, when we last heard of him, was practising at hur need crystallized cocoa

by smoke The

when collected w

would render the enterprise unprofitable What pays natives on a small scale will not pay Europeans when the matter is entered into on commerscale with the pay outopeans when the matter is cheese into on commercial principles. An experiment night be tried, however, labour being economised by the use of ladders, perhips, and a larger use than the natives make in toddy drawing, of safe passages from tree to tree! (Tropical Agriculturist, 1881 87 568)

SPIRIT

T628

COCOS The Coroa nut Palm Spirit. nucifera CEMENT CEMENT MADE OF LIME AND COCOA-NUT JAGGERY 1627 makes excellent cement " Drury remarks: "This jaggery is mixed with

- eat heat and bricklavers prest castor which the

seeds are boiled "

In Spons' Encyclopædia there occurs the following regarding Ceylon from burnt coral or receiving so beautistinguished from the

this subject appears to be well worthy of chemical investigation, for there seems every reason to presume that the property of this ingredient in combination with lime might, with great advantage, be employed to replace the whitewashes commonly used, to the injury of the garments of whoever may lean against walls so coloured (Conf with opening sentences under Domestic Uses, and the account given under Dye, C. 1547)

PAILM SPIRIT OR ARAK Instead of being consumed as a fermented beverage the palm wine parate record rest satisfied

o be tapped the method of

taxation and process of distillation generally pursued. The present notice of cocoa nut spirit may therefore be concluded by the following note

kindly furnished for this work -

Dr Lyon, of Bombay, has recorded some interesting details regarding the alcoholic strength of toddy from the cocog-nut, date and brab In the following table is shown the average alcoholic strength of six night collected samples of each of the three kinds of toddy at respectively three and eight hours after collection and the average maximum alcoholic strength attained by the samples, as well as the strength of samples collected during the twelve day-hours, when examined the morning after

| editection = | | | | |
|--|----------------------|--------------------|--------------------|--|
| | Proof | OF SPIRIT PER CENT | | |
| | Cocoa nut | Date palm | Brab (Borassus) | |
| Night samples 3 hours after collect on 8 "" Maximum strength | 7 15 10 0 11 9 | 5 8 8 0 11 0 | 3'9 47 79 | |
| Day samples | 108 | 11 7 | 65 | |

cocos

| The Cocoa-nut Palm. Spirit. | cocos nucifera. |
|--|---|
| "Dr. Lyon finds that in toddy collected in pots which have previously been used, fermentation commences before the pots are removed from | SPIRIT. |
| h ann and af af afact to separate the state of an order of | ı |
| The second secon | |
| Vinegar from Palm Wine,—Nearly every writer who has dealt with the subject of the useful products of the cocoa-nut alludes to the vinegar prepared from the junc. "One hundred gallons of toddy produce by distillation, it is said, twenty-five of a rark. Or it may be allowed to undergo being allowed to the product of the p | VINEGAR 1629 |
| STRUCTURE OF THE WOOD. | 1630 |
| possesses great elasticity, and is for this reason particularly well adapted for temporary stockades which are exposed to cannon-shot." (Drury.) DOMESTIC SACRED USES | DOMESTIC 1631 |
| | Hukah Bowis 1632 Ornamental Objects 1633 Spoons 1634 Sugar-pots 1635 Tea-pots |
| a graphic account of the manner in which the cocca-nut enters into the even day life of the people of the tropics. Dickens in Household Hords says: "To a native of Ceylon the C. 1636 | 1636 |

COCOS nucifera

The Cocoa-nut Palm Domestic Appliances

DOMESTIC

456

cocoa nut palm calls up a wide range of ideas, it associates itself with nearly every want and convenence of his life. It might tempt him to assert that if he were placed upon the earth with nothing else whatever to minister to his necess ties than the cocoa nut tree he could pass his ex stence in happiness and content. When the Cingalese villager has felled one of these trees after it has ceased bearing (say in its sevent eth year) with its trunk he builds he hut and his bullock stall, which he thatches with its leaves. His bolts and bars are slips of the bark by which he also suspends the small shelf which holds the stock of homemade utensils and vessels. He fences his little plot of chillies tobacco and fine grain with the leaf stalks The infant is swung to sleep in a rude

I Sho i a yoke or pings formed of a co oa nut stalk. Whe i i e 5 l he drinks of the fresh juice of the young nut, when he is hungry he eats its soft kernel If hah a - 4 L -- and es of arrank ds

> COCOA INLU . . softens it with cocoa nut

- a cocoa opt

d

chars, th the tree jars his Over his cocoa nut

course, a accordance with fact. It is however a true p cture of the all importance

of the Prince of Palms to the inhab tants of the trop cal regions In order to convey some idea of the numerous uses of the cocoa nut palm the following extract from the Colorial and Ind an Exh b ton Catalogue may be here reproduced It is a 1 st of certain art cles prepared

state &cc y the (., ' over

the metall c one of not being corroded (3) Drainer (Zara) -Used for draining food fried in ghi (clarified butter) or o I

(4) Ladle (Doho) -Used for water (5) Ladle small (Buddi) —Used by natives for taking out ol for daly

use from an earthen vessel contain ng the yearly or quarterly stock It is not corroded by the o'l (6) Hubble bubble (Gudguds) -Th s is the hukah of the poorer classes

(7) Beads (Man:)

(8) Vinegar (Sirka Amti) - Made of the ju ce (toddy) of the cocoa nut palm

| The Cocoa-nut Palm: Domestic Appliances. | cocos nucifera. |
|---|--------------------|
| (9) Pickle (Lonche, Achár) — Made of the puth of the top of the fresh tree with vinegar of the jure (kiddy) of the same palm. (10) (Figg) — The spathe of the blossom. (12) Bib (Kadi Hirvist) — The not of the leaf. (12) Broom, Gaz (Kersuni, Butand, Zadd) — Made of leaf-ribs, it is | |
| (13) " | |
| (14) ¹¹ | |
| (15) | |
| (16) t | I |
| guard (17) Drum (Dholki),—Made of a piece of the trunk of the cocoa-nut |) |
| tree (18) Wood piece of rafter (Barod Winsa).—Made of the lower part of the tree 10, 20, and 25 feet in length. (20) Oil (Khibori)—Oil extracted from Iresh coca-nuit by rasping fine, drying, and pressing between corr and twisting with hands or by extracting the milk and separating the oil by heat. Used internally called the milk and separating the oil by heat. Used internally (21) Hair oil—Cocoan int hair oil. (22) Liquor (Darn, Rashi Urakh)—Spirituous liquor 60° U.P., distilled from coca-nuit juce (foddy) and drunk hot. (23) Panch (Quennado, Portuguete name)—The punch is made of the liquor of the coca-nuit palm with spices and sugar from the receipt of the Portuguese. There is no native name for it, and its only known to the Native Christians of Bombay. Drunk hot for a cold, one or two cupiuls. (24) Liquor (Fienidari Port Dobrado) (double)—Liquor made of cocanuit (toddy) junce by redistillation 20° U.P.; formerly much used (25) (25) (26) (27) (28) | |
| (29) Sizes by natives | 1 |
| (30) es and sizes by | l |
| (31) | |
| (32) Floor mats.—Made in Malabar and in the Bombay jails of different sorts and colours. (33) Cage (Pinjará, Khinf) — Made of the rib of the leaf. (34) Horn (Pipant Toutora) — Made of the leaf of the paim; gives a loud sound when fresh. (35) Horn, small aire (Dinkti Pipáni).—Made of the leaf of the palm; gives a loud sound when fresh. (36) Top partic (Pipan).—Made by children of the leaf of the palm; when new it looks better. C. 1636 | |
| C. 1030 | |

| +30 | |
|-------------------|--|
| COCOS nucifera | The Cocoa-nut Palm · Domestic Appliances. |
| DOMESTIC | (37) Toy parrot in cage (Pinjaryat Popat) - Made bychildren from the |
| - | (38) Leaf f |
| | (39) Root (mouth |
| | (40) Rope (Kathá, Sumbha) —This is extensively used (40) Oil-bottle (Doula).—Hung beneath the labour-cart with castor oil and brush in it for lubricating axles |
| | (42) Nut, immature (Khakota) — Used medicinally as an astringent, children are fond of it |
| | (43) Trough (Panshira) —Trough made of cocoa-nut tree, used for catching water drawn from a well with a Persian wheel for irrigation purposes (model) |
| | (44) Conduit (Panhal)—A conduit put under the hole of the trough for conveying water for irrigation purposes |
| | (45) Adapter (Nala) - Piece of the adapter used for connecting the native still to the condenser |
| | (46) (Tuntina) — Native musical instrument, used by the poorer classes (47) Beam (Bahal) — Piece of beam of the shape used for houses. It is also used for fishing-stakes in the sea, generally two cocoa nut trees make a stake 60 to 70 feet long. |
| | (48) Rosary box —Made of immature cocoa nuts (49) Charcoal Powder (Kolsá) —Burnt shell used for preparing black and |
| | iead coloured washes for houses (50) Broom (Zadu) — Made of the ribs of the leaf, used by the Bombay and other municipalities for sweeping roads, streets, yards, &c |
| | (52) Broom (Zaddû) — Made of the stems of the blossom and nuts, used by the cultivators for collecting dry leaves for (rab) burning on the fields |
| | (52) Carbina (17 3) 1 D1 1, (53) (54) |
| | (55) |
| | the gosavies (a class of professional beggars) (55) Sling (Shinka) — Used for keeping sundry articles of food out of the ing cets life |
| | (57) F and |
| | (58) Tar with acetic acid (Kartel)—Made by burning the shells in a |
| | (59) (60) washing baskets and rice drainers (Shibum) |
| 1 | (61) Sugar, molasses (Gul) — Made of the juice (toddy) in Goa (62) (Band) — Peeled from the outer part of the stem of the leaf |
| | as a cord by the toddy drawers (63) Cocoa mut gilded (Karyacha Narel) — Offered by the higher classes of Hindus to appease the sea on the cocoa-nut fair day At weddings the bridegroom and bride carry it in their hands |
| | C. 1636 |

CODOMORSIS The Cocoa-mit Palm : Domestic Appliances. ovete DOMESTIC (61) Husk (Sál. Chavád, Sadan) - Used as fuel. Especially for backing purposes also affords cor fibre (6s) Scoons .- Made of the shell The round and deep ones are used as denking cane (66) Neck helts (Pattá).-Used for volume bullocks and buffaloes to carts. ploughs oil-mills, &c (67) Sack (Thoule Fall) - Used for sending out articles: a somewhat similar one is attached to the cart for carrying straw or grass (68) Tooth-brushes (Daton) - The nedicels of the blossom are used as tooth-brushes (60) (20) (71) ... (72) Soan (Sahu) - Made of cocna-nut oil, has larger percentage of water than any other soan (72) Puzzles and toys. -Rings, whins, neckties, tattles, crosses, &c. (74) Bats for cricket -Made of the wood (cocoa-nut) (75) Oil-cakes (Pend) -Oil cake from the native mill

(76) Patimar (ship) (Fatemeri) -Toy made by the boys of the fishermen (77) Boat, fishing (Hodke) - Toy made by the boys of the fishermen class. (78) Kernel (Khobre) - Dry kernel (73) Stem (Thintar) — Used as broom (80) Charpai, Cot (Khat, Báj) — Used by the natives (model).

(83)

or flax fibres.

or cooked.

(81) Potash (crude) (Khar) - The ash of the stem of the leaves, they pro-

duce 20 per cent of ash (82) Cocoa-nut, abortive (Vánzá Nárel, Váhal) - Used as floats for begin-

Codilla -A commercial term for the refuse separated on cleaning hemp

CODONOPSIS, Wall . Gen. Pl., II . 557

[1 60, fig. 3; CAMPANULACER. Codonopsis ovata, Benth ; Fl. Br. Ind , III., 433; Royle, Ill , 253, Vern _I.4d4t

Habitat. - A herbaceous plant common in the N W Himálaya from Nashmír to Gurhwál at altitudes from 8,000 to 12,000 feet, distributed

4- A/-t4- 44-٠., MEDICINE. 1630

1640

1637

1638

FOOD.

COFFEA Coffee arabica COFFEA, Linn, ; Gen, Pl., II., 114. FRUBIACEE. 1611 Coffea arabica, Linn; Fl. Br. Ind., III., 153; Wight, Ic., 1. 53; COFFEE Eng.: CAFÉ. Fr : KAFFEE. Germ. Vern. - Bun (the berry), Kahwa (the same roasted and ground). bun, bun, caffee, coffi. HIND Kawa, bund, c Man, bun, kanwa, buna, g Man, Bánd, tochem-keweh, caps. Tam: Kaps-vittulu, ca Kaphi, Bonda-bija, kapi-oi; Kaphi, Bonda-bija, kapi-oi; Arab ; Bun, qahva, kahwa, kaphi-si, Burm , Kopi atta. Shop, and in Tempo as applied to the perry. Ref ----oc. Four dia, 1851. ssociation 1879: D

in Lacene,

Coffee Cultivation

COFFEA arabica CULTIVA-TION.

Habitat -Most authors seem to agree that the coffee plant is indipenous to Abyssinia, the Soudan, and the coasts of Guinea and Mozam-"Perhaps in these latter localities, so far removed from the

No one has yet found it of penetrating into it will be hard to

ilty of germinating, often spring up round the plantations and naturalise the species This has occurred in Brazil and the West India Islands, where it is certain the

coffee plant was never ind genous" (De Candolle) It is a small, much-branched tree or bush 15 to 20 feet in height, with whitish bark and white orange like flowers. The fruit, which is red on ripening, is about the size of a small cherry, and contains two seeds, closely united. These on being separated constitute the coffee berries

of commerce, and on being roasted and ground, the coffee of the shops In India Coffea arabica—the coffee plant—is largely cultivated, but

other species are also met with

2 C bengalensis Roxb, occurs from Kumáon to Mishmi, also in Bengal, Assam Sylhet, Chittagong and Fenasserim Fruit ovoid-oblong (Haring in Chittagong see Agri Hort Soc Ind Proceedings, Oct 1865)

3 C fragrans, Korth, found in Sylhet and Tenasserim Fruit much

like the two last.

4. C. Jenkinsu, Hook f Khasi Mountains Fruit and seeds different from the last being ellipsoid

5 C khasiana, Hook f. Khasi and Jaintia hills Fruit & inch in diameter, smooth, seeds ventrally concave

6 C travancorensis, Il & A . occurs in Tranvancore Fruit broader

7 C Wightiana, W & A , the Western Peninsula, in and places from Coorg to Travancore Fruit much broader than long, with a deep furrow

With the exception of the first these species are not of any special economic importance, and very little coffee is grown in the tracts in

HISTORY OF COFFEE CUITIVATION AND OF THE HABIT OF COFFEE-DRINKING

The regions best suited for coffee cultivation he between 15° N and 15° S latitudes, but it is grown as far as the 36° N to the 30° S in regions where the temperature does not fall beneath 55° F (13° C). The area of its cultivation is in fact very nearly the same as that of conton. Within the tropical region it may be cultivated at the level of the sea or even much further to the north and south of the equator than has been indicated The plant manifests, in other words, a remarkable power of endurance, but it does not follow that where it may be grown as an ornamental garden bush it may there afford the com-

mercial product. Within the tropics it will yield profitable returns only

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Habit of Coffee-drinking

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HISTORY

winds, blow away the flowers and make 50 per cent difference in 100 ft bo hot and dry, the plaints require shade, and if strong winds prival during the flowering season, belts of forest have to be left to protect the plantation. This is regarded an important consideration in cleaning and for a coffee plantation. Dr. Shortt says. "In low countries there is not sufficient moisture in the soil and when shaded and irrigated, it produces a coarse and uneven bean devoid of the peculiar aroma essential to

the mints of matine influence. On this account the recommendations of the early advisers of the Government of India to prosecute experimental coffee cultivation on the lower Himalaya from Darjiling to Kumhon have been abandoned. The occurrence of certain wild species on the

seeds

It has been stated that the coffee plant of commerce is truly wild in Abyssinia and that it is there called bun or boun I has name

coffee was introduced into Aden by a certain Sheikh Shihabuddin

there arose after some few years, in 1511, a crusade against its use as un-

ed a Greek servant, Pasqua Rossie, for the purpose of preparing its favoured beverage. His friends grew so fond of it that to prevent their

Consumption of Coffee

COFFEA arabica. HISTORY.

too frequent visits to his house he recommended Rossie to start a public coffee-shop. This was opened in St Michael's Alley, Cornhill. Coffeecontestance, I may opened in St. Injects Fidely Contents shops rapidly multiplied, but the beverage (although from a very different reason) soon met with as much official opposition in London as it had sustained in Constantinople. Charles II (in 1675) viewed these shops as the meeting-places for disaffected persons, and a royal proclamation was issued for their suppression. Coffee is spoken of as being in use in France in 1640, and the first public café was opened in Paris in 1669 Shortly after, it became general throughout Europe. It may be here added that of the three great dietary beverages Cocoa was the

trade which by 1847 checked the further development of the demand for coffee There are doubtless many causes that may have contributed to bring this about, chief amongst them may be placed the facility with which coffee can be adulterated, the greater consumption of cocoa, and the ease

lative measures appear to have had much to say to the growth of a greater coffee consumption in continental countries than in England, or rather to the decline of coffee consumption manifested in Great Britain with the gen th of the ton damand

be confused with the imports of coffee Great Britain does an immense

-The consumption of coffee n 1857, 34,518,555lb, in 1867, Consumption. to 31,859,408lb, and slightly improved in 1880, being in that year 32,480,000 These figures must not

BRITAIN, 1643

reniguous 110, and Luropean Russia 4th. Inc United States of America are supposed to use on an average Stb per head of population

per annum. Mr. H. Pasteur, in his report on the coffee shoun at the C. 1643

| COFFEA arabica. | Coffee Cultivation Extended |
|--------------------------------------|---|
| HISTORY | Color aland I den Talk |
| EXTENDED CULTIVA- TION 1644 | EXTENDED CULTIVATION.—The cultivation of the coffee plant began to extend towards the end of the seventeenth century, being carried on in |
| | |
| | produces more coilee than all the other plants in the world. In Brazil coffee is completely acclimatised, and there are said to be 530 million plants under careful cultivation. Coffee is also extensively grown in Costa Rica, Guatemala, Venezuela, Guiana, Peru, and Bolivia with Jamaica, Cuba, Porto Rico and the West Indian Islands generally ils |
| CEYLON Introduction. 1645 | and India are the countries where its introduction has assumed an important commercial character it is not end en indice. |
| | tinued by the natives of Ceylon. In 1825 the impetus to iresh emuli. 28 given by Sir Edward Barnes in the establishment of an upland European plantation. In 1877 it was estimated that the capital invested in Ceylon coffee and a fungus. |
| | |

| Introduction of Coffee Cultivation into India. | coffea arabica, |
|---|--|
| cwt. in 1876, to 312,000 cwt. in 1884, and to 230,000 cwt in 1885" (Fasteur) INTRODUCTION INTO INDIA.—The history of the introduction of coffee | HISTORY. INDIAN. Introduction. 1646 |
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| pl and. There are as one as the same distance to the same | ı |
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| 2 II C. 1646 | , |

466

COFFEA Coffee Cultivation-Locality acabica

HISTORY.

thousands of acres of good soutable land for coffee near navocable too where manure and labour are cheap

Coffee has also been introduced in a Burma. For some time the effort to open out plantations seemed to be doub ful, and Mr. Petley, speak made the garden on the haren Hills north-east of Tourgon recoved extensy that mu h damage had been done by a mo'e cricket Snoethen howers, to have been sen to Upper Burma. that the Arabian variety does best on the Toungoo Hills, while at Taroy the Liberian variety is alone thought worthy of cultivation." "Local demands, too, are increasing, as land is being taken up along the I nes of railway between Rangoon, Prome, and Toungoo, and gardens have been formed whereon small grantees are now culuvaing frui and other usfal trees as well as order?

ZETHODS. 1 647

METHODS OF CULTIVATION

Space cannot be afforded to deal with every fea pre of this ephyect the reader is referred to the numerous special publications quoted under the paragraph of references, only the more salient features will be touched upon, and especially those which have a bearing on the future expans on of the ind were

LOCALITIES, CLINATES, AND SOILS SUITABLE FOR COFFEE CULTIVA-TION AS AN AGRICULTURAL PRODUCT -Under the heading "History of Coffee," the subject of the region of coffee cul mation and the climate necessare have been discussed. Dr Shortt says of soil. "This should be nit. abourd og in trostere and containing much humus or vegetable mond. consequently we find that the plant thrives best on either red or buck car, containing combinations or preparations of iron, and covered over with humes formed by the decay of vegetable mat er produced by dense "TESS When these peerts are overlooked, the results are soon seen in the remain The planter, perhaps, ins ead or choosing forest land, has taken up a poor grassy or event event on and however much waste he may have access to, his plants are wurted and soon become vellow, unless be resorts to heavy manuring at a very early stage, which materials creases the experie of the concern. In hard rocky so's the pas require to be deep vestava.ed to perma of the tap roots of the pant strang perpend causily down, and even when every precaution is taken, it will be found that estates opened out on pror sails wall always prove more expensive than the on fores kind, and are not so lasting. The berry produced on rich ferragmous day is found to contain more aroma and the beam is hearest when compared with those of other locations. This fact is so well known to collect polars generally that, in London, a new importation is frequently weighed after bong mested." Some difference of opinion pressals as to the degree of movements soil should cor am In Spres Enty-tethere occurs the following "The points which determine the value of a post for econ culture are ... erranon . z asper . 3 she er from with. Schratz and nichness of sal. Most of these are necessary subset of variation according to locally. She er from wind is perhaps of paramount importance and should not be sacr feed for righer and, 25 the launt can be aruncially obtained much quaker than the former. In wooded country the e-tate may be laid out in books of to acres, enumbed by

COFFEA Coffee Cultivation-Seed arabica.

METHODS.

deadly effects of a damp atmosphere, for, in all probability, he will have to spend his time surrounded by the direst malaria, &c' Spons', on the other hand, says -" The most suitable climate is precisely that which

to Conte

Nursery and Seed .- Having selected the site for a plantation, cleared and burned the trees (taking care, where necessary, to have protecting belts against prevalent winds), laid out the roads and carried the watersupply to the coffee-house, it next becomes necessary to select and pre-

Nursery. 1648

water

Seede 1640

the morning or after sunset.

The selection of seed is of great importance. The stock should be

12 inches apart from each other, so as to give the plantings plenty of room to grow, and subsequently enable the planter to remove them with facility from the nursery to the plantation, or the seeds may be sown in drills

and as the seedlings begin to grow the drills should be thinned out to the

COFFEA

arabica.

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| | • |
| Planting out 1050 | planted, in damp, cloudy weather, from the seed-beds to the nurseries, and placed 9 to 12 inches apart. Care must be taken not to double up the tap-root, and not to leave a stroots. If the tap-root is very! when it soon shoots again the roots of the tap-root seed the horse grown larger, but Shanthank and others strongly recommend the former plan, as, by checking the growth, the young wood becomes hard-ened, and better able, when finally planted ont, to result insects and unfavourable weather. A practical suggestion for preventing young sedenlings being eaten off at the surface of the ground by grubs, its bigbly wrap round a piece of paper about 3 inches broad, where the stem joins the root, on planting "(\$50ms\$). Invino And Planting Out —Soon after being cleared the estate is are in vogue (up and down this line, stake upon for the position of the plants to each stake a rope is hved, and stakes are provided along these lines. A growth stake are provided along these lines a rope is finally held across them at succeeding stages of equal width, as guided by measuring poles, and the small stakes are put in where the movemble rope crosses the fred ones, each stake undicating the site for a plant (2) A rope is furnished with strenched across the plot and stakes are inserted at each rag, it therefore it is more than the provident and the small starker are part to distance fixed upon between the plants, its ring rod. The time more than the provident of the rope each of the rope. |
| | in their perma- lected for trans- plantation, many coffee planters prefer to have two-year old steedings |
| | ree of shade, and |
| | reverse being the |
| | distance adopted varies between 4 and 8 feet each way—7 feet being very common, or 6 feet between the plants and 7 feet between the rows |
| | th each |
| | ion If |
| | should ng and |
| Cultural | efly re- |
| operations 1651 | ition so |
| | С. 1651 |
| | |

Coffee Cultivation-Shade.

COFFEA arabica.

as to prevent the young seedlings from being choked Staking, or sup-

METHODS. Staking, or sup-

The degree to which on the nature of the

ees has deprived the

plantation of the natural protection which belts of trees would have plantation of the natural protection which leafs of the woods have afforded According to many planters, however, all trees should be removed and shade procured through the cultivation of the charcoal tree (Sponia Wights). In two years this forms an ample shade, but as it

and, in his report trees in helping It is a matter for

regret," he a

out break o forwards of

is more important than a complete system of utains and toads. If the operations in this direction have not been completed up to date, the energies of the planter during the first two years may very appropriately be turned to these considerations. Drift surface-water not only removes the soil, but may altogether wash away the plants A proper system of drainage becomes essential, not only to remove the water from damp and cold water-logged soils but to provide against the dangers of sudden

teanches should be fed by

one afformed by the you dee I much had

runing. 1652

COFFEA arabica.

Coffee Cultivation-Pruning.

METHODS

postpone the operation till the shrubs have borne their maden crop, even though extra staking be required to withstand the wind. His plan is to remote the two primaries at the required height, by a sloping outsard cut close to the stem, and then to remove the top by an oblique cut, so that the stumps resemble a cross, and a firm natural knot remains to guard against the stem splitting down. Hall (Ceylon) contends that the plants should be topped as soon as they have reached the required height, when the soft wood is easily severed by a pinch between the finger and

topped either at their full heightucker to grow up on the weather
atter plan is preferred. There is
the height to 5 feet, not only is
without damage to the tree, but

without damage to the tree, but s are more readily made to cover Dr. Shortt says "Pruning con-

sists of various operations connected with either arresting the height of the plants to cause them to spread out laterally, or in removing the additional growth of wood, to encourage the plants to push out not

nder the different pping he exposed s it does

latter is hereas in

first result of topping is to induce the growth of masses of shoots, these are removed by what is technically called handling "The first to appear are vertical suckers or 'gormandisers' from under the primary boughs these are immediately rubbed off without injuring the bark primaries spring secondary branches, in pairs, and at very short intervals All such appearing within six inches of the main stem are removed at once, so that a passage of at least a foot is left in the centre of the tree The object of pruning is to divert the for the admission of air and sun energies of the plant from forming wood and to concentrate them upon forming fruit. The fruit of the collectree is borne by young wood, and as the secondaries are not as the secondaries. as the secondaries are reproduced when removed, they are cut off as soon as they have borne, and a constant succession of young wood is thus secured." (Sports) This removal of secondary twigs from the primary boughts is what the latest and the boughs is what the planters call "pruning" The practical effect of the treatment briefly indicated above is to cause a plant about 5 feet in he ght to develope horizontally primary branches or boughs at intervals of about 6 inches throughout the height of the stem, and to form along these boughs a constant supply of secondary fruit-bearing twigs ing or cross-wise branches or twigs are at once removed, so as to force the plant into the arbitrary and unnatural type of horizontal spreading branches which have the advantage of exposing to the sun and light a large surface from which the crop can with ease be removed practicable, the bushes should be handled twice before the crop, and all practicable, the bushes should be handled twice before the crop. The pruns begin to form, but

hat a flush of so heavy ne necessary to sacrifice

COFFE

| | arabica, |
|--|---------------------|
| this by pruning the plant down to the extent it may be experted to fruit without injury. The lateral or primary boughs should not be allowed to grow more than 2½ feet, otherwise they will droop and exclude the light from those below. In pruning, it is often recommended to leave the continuous control of its fruiting next year ear a continuous crop is nipped off, broken, dis nipped off, broken, dis | METHODS. |
| CATEL LAGYS.—Much has been written for and against the growing of other crops along with coffer in Darpeling it was tried to grow tea and coffee together, but with little or success, in spite of the fact that the out door labour and manufacture of these crops so fit into each other that cononly might be effected. In Natal and other countries, plantams, | Catch-erops 1653 |

SPASONS FOR COFFEE PLANTING AND MANUFACTURING OPERATIONS—
The industry being chiefly in South India, the seasons for operations very closely correspond with those of Ceylon The season for

for the collection of the crop and the manufacture of the berries. The fruits commence to ripen in October or early in November and continue till January Thus from flowering to harvest occupies about eight months None but fully ripe betters (technically known as' cherries") should, according to D' Shortt be collected, the women and children going over the plantation periodically to remove all the bright or blood red ones, while carefully leaving the others to mature, once ripe, the soner collected the better. Mr Pasteur says "The usual course, however, is to pick the cherry before complete maturity, when it is of a deep red or cherry colour, the berry inside being then found to be of a fine dark green or blursh green, which it is the endeavour of the planter to preserve as carefully as possible the value of his coffee depending chefly on the depth and brightness of the colour." The more gradually the bloom fades the better

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betti es to be picked up, also the perfies that have fallen to the ground This forms whitis generally known as "jackal coffee." Before the boughs are opened out again, the ground around each plant is manured and forked

The preparing or manufacturing of the "cherry" into the "berry" will be found dealt with in a further page

INDIAN AREA UNDER, AND OUTTURN OF, COFFEE

The cultivation of coffee is practically confined to Southern India. During the three years 1883, 1884, and 1885 the average area under mature

INDIAN, Area and outturn 1655

| COFFEA arabica, | Area of Coffee Cultivation in India, | | | | | | |
|----------------------|--|--|--|--|--|--|--|
| AREA AND OUTTURN. | plants was returned at 186 500 acres, and the average yield at 31\frac{1}{2} in pounds, which were thus distributed | | | | | | |
| | Acres B | | | | | | |
| | Mysore 82,100 7,110 000 | | | | | | |
| | Madras | | | | | | |
| | Coorg | | | | | | |
| | Travancore 4 800 820,000 Cochin 2 200 830,000 | | | | | | |
| ĺ | TOTAL . 186,500 31,250,000 | | | | | | |
| | These statistics, which are in all probability defective, have been take from the Statistical Tables of British India published by the Department! Finance and Commerce up to 1887. These tables include the Nativalest of Cochin, Travancore, and Mysore, and hence the area given greater than that see cool 10 and 10 and 10 area of 10 area. | | | | | | |
| | British India of the Nilghins it has been said that there exist 200,00 acres of reserve suitable for coffee The port of shipment for Nilghin coffee to the | | | | | | |
| | not likel to aviand or — has been its, 81,54. Mysore | | | | | | |
| | too great of | | | | | | |
| | for coffee-planting progressing much further than at present, except or the sheltered tracts | | | | | | |
| | "A northern aspect is best, being moist during the dry season, and | | | | | | |
| | eastwards or westwards accordin | | | | | | |
| | ing winds. On the western sl | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Mysore 1656 | may be tound useful — In Mysore the cultivation is limited almost exclusively to the Kadur Detect in Mol. II according to the cultivation is limited. | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |

Area of Coffee Cultivation in India.

COFFEA arabica. AREA AND OUTTURN.

planters was Mr. Cannon, who formed an estate on the high range immediately to the south of the Baba Budangiri, where the original coffee-plants are still in existence flourishing under the shade of the primeval forest

"The success of Mr. Cannon's experiment led to the occupation of ground near Aigur in South Manjarabad by Mr. Green in 1843. During the last fifteen years, setates have sprung up between these points with such rapidity that European planters are settled in almost a continuous chain of estates from the northern slopes of the Baba Budans to the southern

limits of Manjarabad, not to mention Coorg and Wynaad beyond."

The above account of the introduction of coffee into Mysore was first published by Colonel Onslow, from whom all subsequent writers have borrowed their information without materially adding to or correcting any

one feature of the original statement

..

Madras Presidency —The following extract taken from pages 290 and 291, Vol I of the Madras Manual published in 1885, gives interesting particulars regarding the cultivation of coffee in the Madras Presidency: "The principal coffee tract of Southern India is along the western coast, and coffee estates extend in nearly an unbroken line along the summits and slopes of the Western Ghauts, from the northern limits of Mysore down to Cape Comorn The only portions of the area with the limits of the Madras Government are the Wynaad tract and the Nilgiri Hills, the rest being in Mysore, Coorg, and Trayancore"

Nigiri Hills, the rest being in Mysore, Coorg, and Travancore."

Of the early plantations the Madras Manual adds. "Nearly all the land taken up at this period was what is known as grass or bamboo land, and in consequence most of the estates proved unprofitable. Of many of them not a trace, except the runs of bungalows remains at the present

madras. 1657

> South Vynaad 1658 -

1868, and, according to the returns then made, the acreage was 29,909 08, of which 21,479 54 acres were held by Europeans and 8,429 54 acres were

| | | | | | | Cwt |
|-----|------|---|---|--|--|--------|
| 185 | 6-57 | | | | | 37,65 |
| 185 | 7 58 | • | | | | 16,20 |
| 185 | 8 59 | • | | | | 16.01 |
| 185 | 9-66 | • | | | | 49,68 |
| 186 | 0-61 | ٠ | | | | 48,74 |
| 186 | 1 62 | • | • | | | 91,08 |
| 186 | 2-63 | • | | | | 43,90 |
| 186 | 3-64 | ٠ | | | | 91,94 |
| 196 | 4-65 | • | | | | 110,54 |
| ∎S6 | 5-66 | • | | | | 125,89 |
| 186 | 6-67 | | | | | 66,55 |
| 186 | 7-63 | ٠ | • | | | 128,01 |
| | | | | | | |

COFFEA arahica.

Area of Coffee Cultivation in India.

AREA AND OUTTURN Nilghiris 1650

"Coffee cultivation on the Nilghiris was reported on in 1872 area of land on the Nilghiris has proved to be admirably suited for the cultivation of the coffee shrub Not less than 22,897 acres are now under coffee plantations besides 12,231 acres taken up for planting Twenty-five years ago the area under coffee did not much exceed 500 This great increase is entirely the result of private enterprise, and has added much to the prosperity of the Nilghiris, while at the same time benefiting the districts immediately adjoining. In the establishment of these coffee estates a property has been created worth about 5 mill ons of rupees Of the total expenditure, about one third is for the payment of on ntm e ther III

- 1 or of labouring people king, &c, a

previous to only on the

eastern slopes, but they have now been extended to the southern, northern, and north-western slopes, there are also some extensive plantations in the Ouchterlony Valley and in the neighbourhood of Coonoor Coffee cultivation is also carried on on the Shevarov Hills in the Salem District, where nearly 6,000 acres are under the crop, and an area of 4 630 acres has been taken up for planting, on the Pulney and Shiroomullay Hills in Madura, where nearly 4,400 acres have been planted and a considerable area has been taken up for planting, and in the Tinnevelly and Combatore Districts, in the former of which there are about 2,000 acres under coffee and in the latter about 800 acres"

--- and for there are but few

eport

nroa little

ssment 56,440 plots of size of

Of the whole area 40,350 are bearing, producing 6,125 tons of cottee, or on an average which a

acre estates,

cultivation at the rate per acre assumed above comes to nearly 32 LIK and rupees Of this not less than 60 per cent on an average may be estimated Calculating that 26,803 as having been paid to labourers in wages labourers, which is about the average number employed throughout the year, received R6 each per mensem, upwards of 19 lakhs of rupees were expended for labour during the year. The value of the coffee produced, taking the selling price to be, on the average R32 per cwt on the spot, was

about 36 lakhs of rupees" (Madras Weekly Mail) Travincore -The area under coffee in the former State in 1885 was 4 or 3 acres, and in the latter 2,407 acres The area under coffee in Travancore seems to have declined considerably within the past few

ravancore 1661

Coorg.

1660

| Coffee Manufacture | | | | | | | coffea arabica. | |
|--------------------|--|----------|-------|-----------|-------|-----|--------------------|----------------------|
| , | • | - | , | ٠. | 3. | 1 | !00- | AREA AND OUTTURN. |
| | | | | ٠, | | | | |
| good clime ra | wn as the Anaman ch soil, abundant known as the de | timber a | ind i | vater-sup | oply, | are | likely to | |

plateau alone (Broovinullay, or Ham Iton's Valley) is 6 miles long by 3 wide, and contains about 10,000 acres of excellent tea and coffee land.

In Cochin there were, in 1833, 17 gardens, and these gave the return

In Locate there were, in 1883, 17 gardens, and these gave the return of 312b to the acre at a cost of R24

Trensical Trems used by the Copper Planters —The sipe coffee

cochin I662

Technical Terms. 1663

.

chinery necessary for this purpose

PREPARATION OR MANUFACTURE

The preparation of the "berry' from the "cherry" may be said to be accomplished in the following stages (1) Pulping, (2) Fermenting, (3) Drying, (4) Peeling, Milling, or Hulling, and (5) Sising and "innovering".

A will make with the written on the agence as a statement discharged.

MANUFAC-TURE.

Pulping.

being ted ous, meffective, and expensive this process does not secure the

ively accomplished if the collections of ripe cherries made each day are passed through the machinery at one. If unavo daily delayed it may be necessary to ferment the cherries before they can be pilped. This most simple machine in use is that known as the "disc pulper." This most simple machine in use is that known as the "disc pulper." This copper roughened by having projections punched forward. A "single palper of this description will pulp 2010 35 bushels an hour and may be worked by three cooles. A "double pulper" of this type has two such discs and is furnished with a feeding roller. It will pulp 40 bushels an hour, and may be worked by from four to us cooles, and double that amount if worked by worked by from four to us cooles, and double that amount if worked by

| Coffee Manufacture. steam The discs work against smooth iron beds so adjusted that the complete cherry cannot pass between They are torn upwards against the beds, and the projections on the discs tear off the pulp, allowing the brancheds, and the projections on the discs tear off the pulp, allowing the brancheds. |
|--|
| complete cherry cannot pass between They are torn upwards against the beds, and the projections on the discs tear off the pulp, allowing the beans |
| to drop into one receiver and the fragmentary pulp to be carried into another. The disc pulper is in fact somewhat like the cotton gin which drags the fibre forward and drops the seed behind. The 'climder pulper' is an older invention in its conception, but has been improved and perfected to a much greater extent than the disc, the latter, being the content of the |
| cherries are spread out—the pulpin By constructing this building againt therries may be carried direct into assed A good supply of water has also to be conveyed to the loft so as to descend with the cherries into the pulping machine in a continuous tream Space cannot be afforded for a discussion of all the inventions and contri- |
| re separated re separated op pass once afrom the loft of a tube which dips to the bottom of a basin known as the logber. Stones subside in the hopper, while the continuous stream from above causes the hopper to discharge a uniform supply of cheries and water to feed the pulper. Framsentiao. The parchment coffee, which may or may not have been assorted by contrivances in the pulper and seves, has now to be framed to be a supply of cheries and supply of cheries and supply of cheries and the supply of the suppl |
| The state of the s |

COFFE

| Conee Mandacture, | | | | | |
|--------------------------------|---|-------------------|--|--|--|
| and are accordingly preferred. | The tanks should slope towards the dis- | MANUFAC- TURE. | | | |
| | | Drying 1666 | | | |

event of an occasional shower, but shed accommodation into which the beans may be rapidly conveyed is essential. During the drying, the beans have to be turned over repeatedly either by rakes or by the coolies'

many cases, however, there are neither appliances, time nor labour, to put the fresh-gathered fruit 'sun the cherry dries quickly, detriment of the colour as wel

difference between unwashed

or plantation coffee,-the taste of the washed coffee being, as a rule, much more delicate, and free from the earthiness and common rough flavour of the unwashed

PPFLING OF MILLING —This consists of the removal of the parchment and silver from the beans As already stated, this operation is now chiefly effected by the dealers, at the port of shipment, and not by the planters. Indeed, much has been written in favour of the beans being sent to use in London for eur's report will be

indicating a pos-

"Among the samples of Wynaad coffee, those from the Eva Estate deserve special attention, one half of that crop having been despatched in parchiment to be pecled and sized in London. The experiment has proved

Peeling. 1667

COFFEA arabica

Coffee Manufacture.

MANUFAC-TURE.

coating almost immediately after being picked The curing requires machinery, motive power, drying grounds, delicate manipulation, and constant supervision, where any of those requisites fail, the coffee suffers in appearance, and consequently in value. Suitable machinery for treating parchment has been erected at two of the London wharves, and there is every reason to hope that this is only the beginning of a new and profitable home industry. Growers will not be slow to perceive that the small increase of freight which they have to pay on parchment is more than compensated for by the enhanced price which the improvement in the quality of their coffee will enable them to obtain" In the Kew Bul laten for MI -000 L

passed through the mill the beans require to be again heated. On the plantation this is generally done by exposure to the sun. The extent to which this is necessary depends greatly on the nature of the beans, and long experience is required to determine this point. As a practical hint it is generally laid down that they should be dried till they resist the pressure of the thumb nail, but no two samples are alike, and overdrying will

Sizing T668

Packing 1660

universally employed

PACKING -- Having followed all the precautions and adopted all the most approved methods and appliances, the coffee producer, to secure the success of his labours, has now only to attend to packing must be saved from exposure to the air, or from being packed in cases that would impart a false aroma. This is usually done by packing the

DULTER-1670

ADULTFRANTS AND SUBSTITUTES FOR COFFEE

Ad Itemat --

aily uch as her

dietary article that is so much and so persistently adulterated as coffee This in a large measure appears to be due to the legislative system which has permitted a mixture to be sold so long as it is declared to be such Criminality consists alone in selling as pure coffee an article that contains anything but coffee Legally "chicory" may be the roasted chicory root itself or the root of an allied plant or other vegetable substance applicable for the same purpose as chicory No questions are therefore raised as to the ingredients of a mixture, and indeed, if further protection to the manufacturer be necessary, such mixtures may even be registered as patent med cines. This fact, together with the long-established custom of mixing chicory with coffee, has given origin

COFFEA Adulteration of Coffee arabica. to a greantic system of adulteration. The substances which are most ADULTER-

generally employed are-"1st-Roots such as chicory, dandelion, mangold-wurzel, turnips, parsnips and carrots, &c

"and-Seeds such as beans peas, date-stones, malt, rye, &c

" ard-Burnt sugar, biscuits, locust-beans, figs, &c " (Bell, Chemistry

of Foods) 1 Association formed in

examining certain wellactices of adulteration s attention was the use on of the real article that

the mixture of the spurious with the true coffee beans might be fearlessly ground in the purchasers' presence and sold as pure coffee This subject has already been alluded to under Chicory (see Cichorium Intybus, C Nos 1107 & 1108), and need not be elaborately dealt with in this place

> le without being viewed or a sugar-yielding root becomes a serious adulused of all adulterants

Caramei

facturing special preparations or mixtures. Roasted flour coloured with ferruginous earth is to some extent used as a coffee adulterant, and even roasted liver and other objectionable animal substances are said to have been found in coffee mixtures. A simple mode of detecting the presence of chicory or other caramel admixtures in ground coffee is to throw a little on the surface of a glass of clear water. The readily solvent nature of the

The seeds of several species of Cassia have for centuries and are even now used by the inhabitants of tropical countries in place of coffee These do, as a natter of fact, afford, when roasted and ground, a decection which closely resembles coffee. The reader is referred to the account given under Cassia occidentalis (C. No. 781) for particulars of a coffee substitute which would seem to deserve more careful consideration. India could produce, at a nominal price as compared to coffee, immense quantities of the so-called "Negro Coffee," if that article should be found to commend itself as a wholesome and cheap substitute for true coffee

| 480 | Dictionary of the Economic |
|------------------------------|---|
| COFFEA arabica. | Trade in Coffee. |
| ADULTER- ANTS. | The c- the work article, others in injurious reputation, and to place in the hands of the consumer a theap and pure coffee. |
| COMMERCIAL TERMS. 1671 | Convers Travelle C |
| | age, and uniformity within the sample Form to some extent, though not always, depends upon the source: there are three commercial types as to form—Mecha, small round peaberry; Bourbon, pointed and medium-sized; and Martinique, large and flattened. Colour depends entirely on the deciral of seasons had been admitted to the programme. |
| | |
| PRICES. | PRICES OF INDIAN COFFEE. |
| 1672 | valued as high even as those of Ceylon; and, as stated in another pair- |
| | graph, Mr. Pasteur, one of the highest commercial authorities, gives the first about the highest commercial authorities and the highest commercial authorities, gives the first about the highest commercial authorities and the highest commercial authorities are also also also also also also also also |
| | · |

of native coffee was sold for the same price as a bushel of rice, ms. A4 and, about the same time, estate coffee from the Wynaad was selling on the coast for Provide Add. (1869), estate the work

TRADE IN INDIAN COEF

the work-

"India now stands first and foremost among Brutish possess ons, both for the quality and quantity of its production" Disease has, however, "in many places affected the vitality and staken the strength of the trees, so that they have been less able to resist periods of drought or of heavy monstoon weather, and small and irregular crops have been the contequence. It would stem, however, as if plantations were gradually recovering their former strength, and with good cultivation and manuring

C. 1673

TRADE.

1673

Indian Trade in Coffee.

COFFEA arabica.

and fair seasons India may hope to maintain its position as our largest and best field for the production of fine coffee A hopeful sign for the

TRADE

tom 47,000 to 38 000. This has been accounted for by the fires which destroyed certain gardens, the imperfect returns, and the amalgamation of small gardens. The bulk of the coffee exported from India is washed coffee prepried under European supervision, many of the small native planters selling their produce to net, hobouring European planters or to the special firms that do a considerable trade in pulping and pelling coffee At the same time, there is by no means an inconsiderable trade in unwashed or native coffee, —that is, coffee prepried by the crude native process to which reference has been mide. Mr. Pasteur, in his report of the coffees shown at it.

Mr. Pasteur, in his report of the coffees shown at it.

Samples she commend:

Exhibition, they are quite suitable for our home consumption, and form an important item of the Indian production." The returns for the coffee districts of India show Madras to have nearly a third of its coffee area owned by natives, Coorg about one half, and Mysore fully four fifth. These facts give some idea of the extent of the probable production of native or unwashed berry in India.

Coch sent! impo supply a lick to it come certon and Aden Bombay receives most of this collect, a little grown of the total exports shapped chefty from I of foreign and Madr.

ent howe

COFFEA arabica TRADE

Trade in Coffee

two largest consumers of Indian coffee During the past five years the coasting trade which consists chiefly of despatches from Madras to places within the presidency and to Bombas, has averaged in quantity 70 000 cwt and in value R22 lakhs

Towards the close of the account given, on a preceding page of the History of Coffee, Mr Pasteur's statement regarding the decline of the Ceylon trade has been quoted With the discontinuance of a large port on of the Ceylon cultivation the greatest hopes were entertained of a bright future for the Indian coffee industry Prices revived from 188, to 1887 and during that period the exports to foreign countries maintained a h gher level than during any previous consecutive period. During the + b + for 188 86

advantage of the decline of the Ceylon industry. The Indian foregn trade in coffee has chronically fluctuated It attained its highest recorded fell to of the

trade

with the Madras exports (given at page 473) from 1856-57 to 1867

COST 1674

COST OF CULTIVATION AND YIELD

So much has been written on this subject that it scarcely falls with n the scope of the present article to deal with the various conflicting opinions that have been advanced According to some writers the profits on coffee cultivation in India are problemate, according to others the in Shortt forest reli ng house

folloss -

1st year and year 3rd year Instruments Bu ldings and roads

3.530 174 9

7 160

3 300 4 450

TOTAL

This estimate, he states is applicable to Coorg and Wynard, more especially the former, but he only allows R125 a month for European He proceeds to state that 'the third year is supposed to supervis on The average produce of an acre is estimated at 7 cut, but we could not do better than keep on the safe side and take the produce of an acre at 5 cut. The 200 acres will yield 1,000 cut of coffee per

no on h ng nery.

ars, as

Cost of Cultivation

COFFEA arabica.

the erect n of a pulping house, and other accessaries to the preparation of the bern but Dr. Shortt adds with reference to this that 'these will at best form but a small item'. But he has omitted apparently to estimate for the purchase of grass and forest land, and to take into consideration the cost of the labour of preparing the beam.

The author of the valuable article on coffee planting in Spans' Ency clopating a yes several estimates both for India and for Ceylon He states. The following estimate (in rupees) for coffee cultivation in South India is based on the purchase of goo acres of forest land at RSp and 200 acres grass land at RSp bringing 200 acres of the former into full bearing. Labour, 4 annas a day, evclusive of mastire's wages. Then follons a balance sheet the main facts of which may be expressed as follows—

The 200 acres by the seventh year are brought under full bearing and have not only cleared off the expense of the purchase and cultivation of the estate up to due but the plantation has given its owner over and above Ris 291. To continue to work it an expenditure of R2 648 would be entailed but the return from the crop would be about R54 oce a year so that with a port on of the steet might now be extended to its full limits 300 acres. This estimate has not only been from ed to cover the charge of boulding all the necessary houses, but for in she those with pulping and other machinery, and to stock the yard with too head of cattle and provide a horse for the superintendent. The capital necessary to organise such an estate (without having to obtain loans on crops) would thus be about R75 ooo or say £5000, and during the fifth sixth, and seventh years that sum would be recovered. Interest on

is however unable to verify these estimates but since they have been framed by high authorit es they may be viewed as approximately ind cating the possibiles of the Indian coffice industry when, with average seasons and Iar prices the speculation is entrusted to careful and skilful supervi

| COFFE | |
|---------|--|
| PROFITS | |

Diseases of the Coffee Plant

ready made estates, and pleased their own minds and those of the other shareholders with visions of 50 or 60 per cent of profit. As might have been foreseen, such extravagant hopes have never been realised, the anti-uptated fortunes having retreated far away into the future, and the 50 or 60 per cent diwindled down to 5 or 6 In many cases, indeed, these adventures have, from various causes, proved complete failures, the balance always being on the wrong side, and, taking them as a whole, the results have been such as to render the public distrustful of offee culture as a sale or profitable investment, and to lower greatly the value of estates? "(Report on the Ravages of the Borer on Coffee Estates)"

diseases. 1675

DISEASES OF THE COFFEE PLANT.

The a man These are all 1 to the are all 1 to this class belo belo. The are are all 1 to this class belo belo. The are are all 1 to the due to be due to want of depth of soil, but cumate and bad cultivations.

tion may have also to do with it Rot or the withering of the young leaves is due to wet and cold.

There are, however, certain specific diseases some of which have practically baffled both the planter and the scientists, and have proved so dis-

astrois as to have rumed the plantitions in large tracts of country. The has been the case with Ceylon, the leaf blight having there proved so far incurable as to have caused the planters to substitute tea for coffer of their estates. Numerous reports have been published such as those by Marshall Ward, Nietner, Bridle, Harman, Forbes Watson, Moris, Ocoke, Balfour, &c. To review even briefly all that has been written on the discress of the coffee plant would take up far more specified and the present outline of the coffee industry. It may be said that the specific discases are referable to two sections—Fungad and Insection.

In the company of the control of the coffee industry of the control of the coffee industry. It may be said that the specific discases are referable to two sections—fungad and Insection.

I the chief FU.001 diseases are —(a) Leaf Slight —This is a tuoler disease which is supposed to have first made its appearance in Cyclin 1809 and to have appeared in South India two years later. It has not appeared in Java and Sumatra, but does not seem to cumiler such limits of the Indian Ocean. It is caused by the fungur Honor delimits of the Indian Ocean It is caused by the fungur Honor distinct in the form of the Indian Ocean It is caused by the fungur Honor distinct in the form of the Indian Honor distinct in the Indian

ar, but in its in the form of k and leaves ial cure, but

with little success If powdered sulphur, alone or mixed with causic line, be blown over the plants and sentiered on the ground below the bouths, because the disease is prevented and the coffee plants seem at the same time to be benefited. This is, however, expensive and is more a prevention than a cure. When once the disease has taken hold of the leaves nothing has yet been discovered that will destroy t without at the same time killing the leaves.

(b) Leaf rot or Candelillo is a disease attributed by Dr. Gooke to the fungus Pellicularia Koleroga, Cooke. It is prevalent in Mysore plantations in July, the leaves, flowers, and berries becoming covered with a shipy

Diseases of the Coffee Plant

COFFEA arabica piseases

gelatinous substance which turns black about the time that the affected parts fall from the plant (Kew Reports 1879 30 and 1880, 15)

II Of the Insectiform diseases met with in India the following are

those which give most trouble -

(c) Borer—This pest used to be known as the "worm" and "coffee fig." It is most troublesome in South India, especially in Coorg and the Wynaad, where in 1865 66 it destroyed whole estates—It has been determined as the beede Kylotrechus quadrupes. It is red or yellow, with black in transverse lines. It damages the trees by boring holes into the stem usually a few inches above the ground. These passages are at first transverse but soon ascend sprally to the growing tip where the larvæ are matured. The plant early shows s gins of death, and ultimately withers down to the point where the beetle entered. This pest is most prevalent in hot exposed gardens, and may be kept in check by free urrigation.

destruction of the parts to which it adheres the flowers and young fruits falling freely. The pest does not do much harm however until it has been two or three years on an estate. It prefers cold damp plantations at about 3 cool feet in allitude. This bug may be first recognised as brownish wart like bod end These are the females each of which produces some ore ggs. Fortunately this pest is freely attacked with parasites which

greatly help the planter

The black bug is known as Lecanium nigrum. Like the preceding this attaches itself to the tenderest shoots it also prefers gardens at high alt tudes in damp situations. The female somewhat resembles a scollopshell. When the eggs are incubated the twigs become covered with an highest prefers the same prefers.

the young berries what like a wood-

e It is flat, oval,

It seems to prefer hot dry plantations and disappears with the rains, only to return in time to destroy the setting of the fruits. It is found on the roots about a foot below the surface of the soil in the axis of the leaves and among the clusters of flowers and young fruits. It may be easily recog

nised by the white excretion formed around the larvæ

All these and the other less known coffee bugs have a strong d slike to tobacco juice. They may be prevented from developing to an injurious extent by brushing the tugs with tobacco. Some planters recommend saltpetre and quicklime in equal proportions dusted on to the affected

COFFEA

Diseases of the Coffee Plant

DISEASES.

by hand has been tried, but it can only be attempted upon young trees without crop; and Mr. Nietner, although allowing that an immense

now is " (Balf Cyclop)

(e) Grub—The Larvie of the moth Agrostis segetum are very destructed that sheese is known to the planter as "Black Grub". It appears about August to October—It lives in the ground, but during night comes out to feed and does much harm when very plentitul It is, however, local, perferring certain parts of the estate, but does not confine its ravages to the coffee plant only, as it eats any cultivated plant—regetable or fruit tree—but despises weeds—It is very destructive to young plants—Mr. Mistiner states that he lost as much as 25 per cent of his seedlings through this performance of the plant o

COFFEE-

bernes form the so called Jackal Coffee.

COPPRE-LEAP TEA.

It has long been known that coffee leaves, if cured by a process similar to that adopted with tea leaves, afford a beverage which contains sufficient Caffeine to entitle it to a position as a cheap substitute for tea or coffee Indeed, according to some writers, the leaves contain more caffeine than the berries. A decoction from the leaves is a did be regularly used by the inhabitants of Sumaira, especially at Padaga. AM - John Gardener of London even patented a process for manifacturing and partially roasting the leaves, from the belief that they were likely to come into use in Europe Unfortunately, however, leaves have an unpleasant senna-like flavour which greatly maintee leaves have an unpleasant senna-like flavour which greatly engines the leaves have an unpleasant senna-like flavour which greatly engines the leaves have an unpleasant senna-like flavour which greatly end the leaves have an unpleasant senna-like flavour which greatly be leaves have an unpleasant senna-like flavour which greatly be leaves have an unpleasant senna-like flavour which greatly end the leaves have an unpleasant senna-like flavour which greatly be leaves have an unpleasant senna-like flavour which greatly be leaves have an unpleasant senna-like flavour which greatly end the leaves have an unpleasant senna-like flavour which greatly be leaves have an unpleasant senna-like flavour which greatly maintenance in the leaves have an unpleasant senna-like flavour which greatly end the leaves have an unpleasant senna-like flavour which greatly maintenance in the leaves have an unpleasant senna-like flavour which greatly maintenance flavour sent flavour sent

coffee-leaf might be sold at 2d a pound as compared with tea at 10d. The following note has been furnished for this work by Prof. Warden The following note has been furnished for this work by Prof. Warden The following and College The College The

e, contained but during

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The Uses of Coffee

COFFEA arabica.

the roating of the berries a larger amount is developed, to which the aroma is due. Caffeine appears to act as a stimulant to the nervous system. Coffee leaves have been used as a substitute for the berries they contain caffeine. Mr. N. M. Ward of Padaing writes regarding the use of the coffee leaves as follows. I was induced, several years ago, from an occasional use of the coffee he to adopt it as 'a duly beverage, and my constant practice has been to take a couple of cups of strong infusion with milk in the evening as a restorative after the business of the day. As a beverage the natives universally prefer the leaf to the berry g ving, so a reason, that it contains more of the bitter principle, and is more nutritious." The best mode of roasting is by holding the leaves over a fire made of dry bumboo or other wood which gives little smoke. When sufficiently roasted the leaves have a buff colour, they are ground to a powder and used in the same way as coffee. (Hanbury)

COPPER PILE

COFFEE PULP. 1677

It has long been known that the ripe pulp of the coffee cherry contains an amount of sugar which in glit with advantage be converted into alcohol. At present the washings from the pulping machine are run off and no advantage taken of the sugar they contain Several writers have urged the planters to utilise this by product, but as yet no definite steps have been taken in that direction. It is indeed even questionable whether or not it would pay the planter to divert his attention to a perfectly distinct enterprise. The tendency of the present day is to enable the manufacturer in every branch of industry to compete to the last degree by affording him the means of deriving additional revenue from the waste or by products of his industry. In this light it seems pos-

the production of the influsion known as kahne or kischer Dr Shortt states that according to his experiment 8 or of dried husk, when steeped in water until fermentation sets in, yielded on distillation 1 or of spirits. If not employed in this manner, might not the dried husk find a demand as an auxil ary to cattle food?

OIL

01L 1678

The term 'Coffee-oil' is in the trade given to palm oil in which the kernels have been more or less burnt during the process of extraction

aroma might be restored to the coffee or employed to flavour liqueurs. This empyreumatic oil is formed during the roisting, and probably at the expense of caffeine and other constituents of the coffee (see under Chemistry)

MEDICINE.

MEDICINE 1670

Coffee while not officinal in the British Pharmacopreia is so in that of the United States of America Many medical men, however, recommend its use in England for mild affections. Its dietary property, as a

COFFEA arabica.

The Uses of Coffee,

MEDICINE.

stimulant to the nervous and vascular system, is that upon which its claims to medicinal recognition depend. It produces a feeling of buoyancy and exhilaration resembling the first effects of alcohol, but it is not followed by depression and collapse. It increases the frequences of the pulse, and stimulates the system to throw off feelings of fatigue, or to sus tain prolonged and severe muscular exertion. It has even been contended that caffeine has the power of checking the waste of the tissues Lehmann found that the distilled oil had this effect in quite as strong a degree as tea The well-established property of coffee in preserving wakefulness depends upon its stimulating property on the nervous system When swallowed it produces a warming cordial impression on the stomach, quickly followed by a diffused agreeable nervous excitement which extends itself to the cerebral functus giving rise to increased vigour of imagination and intellect without any subsequent stupor such as follows on the use of most other stimulants. Moleschott found that it -0 pag 11 -

cient energy of the brain are manifested without congestion or inflammation. In light nervous headaches, not proceeding from derangements of the stomach it often proves immediately effectual. It has acquired much reputation as a palliative in the paroxysms of spasmodic asthma, and has been recommended in hooping-cough and in hysterial affections. "Hayno informs us that in a case of violent spasmodic disease,

highly recommended in cholera infantum, and it has even been used with asserted advantage in cholera. It is said also to have been used successfully in obstinate chronic durrhoca" (United States Dispensatory)

Coffee is much less astringent than tea, and hence it does not cause constipation so readily

Wood states that "upon those who use it habitually, its characteristic influence is not fully evinced, as it has either lost its power in a great in the property in its the regimary in its

to sa a tonic to the digestive organs, and more astringent in consequence of the amount of tannic acid it contains

Certain it is that tea, especially black to the country of the country

te to ch it and and

- L Name reports

Pharmacology, I, 625)

th. or

ber the

Chemical Composition of Coffee

COFFEA arabica. MEDICINE.

coffee in France is supposed to have abated the prevalence of gravel in that country. In the French colonies, where coffee is more used than in the English, as well as in Turkey, where it is the principal beverage, not only gravel, but gout, is scarcely known"

Unroasted coffee has been employed in intermittent fever, but it is much inferior to quinine Roasted coffee is said to have the effect of mposing animal and

beneficial application

coffee, burnt in the wards of a hospital early in the morning, is a deodoriser, and a very fragrant one" (P. Kinsley, Honorary Surgeon, Chicacole, Ganjam, Madras Presidency) ' Is also an antisoporific, when consumed in large quantities, is supposed by the Arabs to have an anaphrodisiacal effect." (A S G Jayakar, Surgeon Major, I M D, Muskat, Arabia) "Dried coffee roasted in an open vessel is a useful deoderant" (Henry David Cook, Surgeon-Major, Calient, Malabar) "Is an antidote in opiumpoisoning (G. A. Watson, Allahabad)

CHEMISTRY.

CHEMISTRY. 1680

The roasting or torrefying of the coffee-beans, combined with the pulverising they are afterwards subjected to induces certain changes to which in a large measure the flavour and aroma of the coffee are due. The woody tissue becomes friable, and at the same time certain chemical changes take place The chief organic constituents of raw coffee are caffeine, fat, caffeic acid, gum, saccharine matter, legumin, and cellulose Paven gives the following analysis -

| Cellular t ssue | | | ٠. | | | | | 34 000 |
|--------------------|---------|-------|--------|--------|-----|--|-------|------------|
| Hygroscopic mo s | ure | | | | | | | 12 000 |
| Fat | | | | | | | | 13 000 |
| Starch sugar, der | trin, i | and v | egeta' | ble ac | ıds | | | 15 500 |
| Legum a | - | | | | | | | 10 000 |
| Chlorogenate of p | otash | and o | affen | ie. | | | - 3 . | 5 to 5 occ |
| Nitrogenous matte | r. | | | | | | | 3 000 |
| Free caffe ne | | | | | | | | o Soc |
| Thick insoluble et | hereal | oil | | | | | | 0 001 |
| Aromatic oil | | | | | | | | 0 002 |
| | | | | | | | | |

Bell (in his Chemistry of Foods) gives the following table of the analysis of two samples, raw and roasted, of both Mocha and East Indian coffees We reproduce the table, both because of its allowing of comparison between these two coffees and of indicating some of the chemical

changes effected by reaction

| oasted | | |
|--|---|--|
| | Raw | Roasted |
| 82 43 4 74 | 1 11 8 90 9 58 | 1 05 41 4 52 |
| 14 14 13 59 11 23 1 24 48 67 4 56 | 4 31 11 81 11 23 94 38 60 3 98 | 12 67 13 41 13 13 1 38 47 42 4 88 1 00 |
| | 4 56 0 63 | 4.56 3.63 |

COFFEA arabica.

Chemistry of Coffee.

CHEMISTRY.

Should the whole of the testa of the seed (the silver skin of the plant

roasted together, the coffee will be much inferior to that obtained by roasting carefully picked and assorted beans. The degree of roasting required for one class of coffee is not the same as that for another. The heat should not be greater than is sufficient to impart a light brown colour to the bean When roasting is carried too far, a disagreeable smell and a bitter and acrid taste gradually mingle with the essential aroma, and thus lessen the merit and value of the coffee By reducing the beans to charcoal the aroma and flayour are entirely destroyed. When the roasting has been effected to the right extent, the volatile oil is produced at the expense of some of the other constituents the table above will show that nearly the whole of the saccharine matter has disappeared This is not the case with the sugar in chicory or other roots, a large proportion remaining as sugar, and hence the rapid colouration imparted to water by a coffee powder containing chicory or other cane-sugar-yielding roots, as compared with pure coffee There is something altogether peculiar in the behaviour of the sugar of coffee under the influences of torrefication. How the volatile oil is formed seems to be a puzzle This oil has been termed Caffeone, and it is the aromatic principle of coffee It is wholly the product of torrefication, the materials of which it is formed being obtained by the destructive influence of heat on the and a me te anantites, con-

roasing, takes a simil beverage produces"

principle upon which not appear to be alter

found in tea Weight for weight, tea welds about twice as much their as the roasted coffee-beans yield caffeine. On this account a greater

of nutriking (as the full

r the

nutritive property of the bean is secured Several writers have strongly advocated the adoption of this practice, but it seems doubtful whether this sever likely to be followed more than that the teat leaves should be easier

erior sung

in stock pursued in England, packets of the ground coffee being suid to the consumer which may be years old is far inferior to the continental system of the consumer roasting and grinding his own coffee in small quantities as required.

Structure of the Wood -Wood white, moderately hard, close-graned Pores very fine and extremely fire, medullary rays very fine, numerous

1681 Pores ver

TIMBER.

LIBERIAN COFFEE

Kœnigii.

| of 1 ber a, Angola, Go. West Tropical a, yielding also irope about the on. Its harder te to withstand the action of ured in to the Royal Botance operimentally tried. Fortu- able to meet these demands until the question of seed-supply was taken up by certain recognised mer- chants. The Kew Reports are full of the most interesting details regard- | 1082 |
|--|------|
| | |
| Ceylon have chosen to supplant their coffee by tea, and while the reports issued by the Superimendent of the Nilghin Gardens continue favourable, the enthiasasm with which Liberian coffee was first received seems to have toned down considerably, leaving the matter still in an experimental position COIX, Linn., Gen. Pl., III. 112. | |
| · · · · · · · · · · · · · · · · · · · | |
| lears" | l |
| Coix gigantea, Koen, Duthie, Fodder Grasses, N Int, 18; GRAMINEE Veta - Kesai, Berra; Danga gurgur, Beno Reference.—Rood, FI Ind. Ed. C. B. C. 650 17 | 1683 |
| the control of the co | |

to have observed them under cultivation, and thus, while the grains are not apparently eaten, the other properties of Cox lachryma are appli-

C. Kænigii, Spreng ; Duthie, Fodder Grasses, 19.

cable to the above.

MIGH, Spreng; Dunne, Fodder Grasses, 19.

Syn. for Chionachae Barbata, R. Br (the Cort Barbata, Rozd.)

C. 1684

| COIX lachryma | Job's Tears. | | | | | | | | | | | |
|------------------|---|--|--|--|--|--|--|--|--|--|--|--|
| | Kurz m high programmes C Balagh | | | | | | | | | | | |
| fodder. 1685 | Fodder — Duthie says that in Balaghát in the Central Provinces, it is said to be used as fodder when in the young state Roxburgh, however remarks that, owing to its coarse nature, cattle do not eat the grass | | | | | | | | | | | |
| 1686 | Coix lachryma, Linn , Duthie, Fodder Grasses, 18 Job's Tears | | | | | | | | | | | |
| | Syn — C ARUNDINACEA, Lami, LITHAGROSTIS, LACHRYNA JOBI, Garin Vern — A recent correspond nce between the Government of India and the | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | NABLEM Auditina Fina or abuthous (the black form), 50 sas (tile 11 ll.), a. kr. si or fats (collective or generic mame), NAG, Hitt.S., Mung, MANIPER, Kristad-mana, SiNG., Es Jin, seyin, a name used in China and Masters. | | | | | | | | | | | |
| | · | | | | | | | | | | | |
| | hence according to them Inula and not Corx would be the true jobs ver, | | | | | | | | | | | |
| | ow- the ther tare | | | | | | | | | | | |
| | and the Pl | | | | | | | | | | | |
| | 357, Dymock, Mat Med W Ind, 2nd Ed, 853; Balfour, Cycl Ind t Hooker 2 litm Jour, II, 259 Habitas Mar | | | | | | | | | | | |

| Job's Tears. | COIX lachryma, |
|--------------|-------------------|
| | |

tes, and appear to occur at higher altitudes. They are also more stunted in growth, and the involuce (or shell around the grain) is looser, softer, and apparently always furrowed—at least this is so with all the cultivated

THE FORMS OF JOB'S TEARS -There are three or four well marked FORMS OF forms of lob's Tears met with in India, which differ from each other in shape, colour, and degree of hardness, and in the presence or absence of

1687

only smooth and polished

The writer has had the pleasure to examine a large collection of samples made in Burma and Assam, and would offer the following remarks regarding these rst-the cylindrical form and and a few and a few and a few

wild in the Pegii Divisions Pegu. Hanthawaddy and (-4)-(1

this berry " It would appear, therefore, that the cylindrical grain may occur in the Miri country, but up to date (in connection with the present enquiry) no information corroborative of this fact has been received from Assam, and the plant does not appear to occur in any other part of India, so that it may safely be viewed as a native of Burma, and possibly distributed into the mountain tracts of Upper Assam and Cachar. The cylindrical grain is always of a white colour, smooth, polished, not furrowed, but constricted towards both extremities and whether wild or cultivated, is collected for ornamental purposes only, and not as an article of food

and-Of the pear-shaped form there are numerous sorts, varying in size and colour -some pale and bluish white, others grey, yellow, or brownblack They are often constricted at the base into a disk-like annulus,

o ice so trick the flater that it can scarcely be proken. The cultivated t

It seems probable these belong to a different plant from the forms described above.

| 494 | Dictionary of the Economic | | | | | | |
|-----------|--|--|--|--|--|--|--|
| COIX | Job's Tears. | | | | | | |
| FORMS OF. | It is somewhat remarkable that in all the cultivated forms, the shell is | | | | | | |
| 1 | | | | | | | |
| - { | | | | | | | |
| | | | | | | | |
| 1 | | | | | | | |
| | • | | | | | | |

the means of recording the vernacular names that are in use with reference to the various wild and cultivated plants. Prou Division.

BURMA. Pegu.

In the Pegu District five " ---- a farm man channel Lind known as cheik or kveiktlis which or

for food or for ornamental t white, the other brown grev.

A brown edible form is cultivated—a polished grain with the characteristic long, thin, and slightly swollen ruish the cylin

drical from the pear-shaped forms. The best quality is said to come from

the upper valley of the Pegu river

In Hanthawaddy District some seven or eight forms exist in a wild state or are cultivated One only is grown as an article of food, namely, a slaty brown irregular grain, of a dull colour, furrowed, and with an This is found only on the plains, is called Kyeikthi, and is sold for 8 annas a basket All the others are wild or cultivated, but collected purely for ornamental purposes

One is a medium-sized steel grey seed,
smooth, shining, and pear-shaped

Three are pinkish brown, small, of the flattened spheroidal form, and the most perfect beads in the whole collertion of Coix seeds before the writer These have been lettered B D and v command

fished, with , impossible ples of the ignment of bove under

Pegu, the sample marked G, agreeing with the so-called "male," and C with the "female" form

In the Prome District both spherical and cylindrical forms are said to occur, wild and cultivated Of the samples forwarded along with the - challed form, which, 1 1-. writer, must be imples furnished

the longer form r. The Denuty

| Job's Tears. | | | | | | | | corx lachryma. | |
|--------------|--|--|--|--|--|-------|--|-----------------------|--------------|
| | | | | | | . – – | | | FORMS OF |

Commissioner deals in his report with a much more extensive series than he has furnished samples of He says the forms of Cox are known collectively by the name Kyakkhi. The cylindrical being Kyakkhi (literally, long Kyak), of the globular form there are names to distinguish certain recognised types thus — Kyakhhim, white Kyak, Sakyaik, edible Kyaik,

Pyasing, or mate-like Kyrik, and Kyrikm, or red Kyrik In the Tharrawood's District the Deputy Commissioner says that all the forms are known by the Burmese name Kyrikhi, but that a large round edible form is known to the Karens as Bê, and is cultivated, which another smaller round kind is known as the Be-ma for female Be) and is collected for ornamental purposes. He dirther forwards a sample of the

cylindrical grain, and says it is known as the Be-kwa.

ARAKAN DIVISION.

In the Akyab District the pear-shaped form is both wild and cultivated. From the town of Akyab, the Deputy Commissioner has furnished three samples of the wild plant, the seeds being smooth, polished, and very hard, especially a brown form. He states that these forms grow in the low marshy lands and are not eatier. He, however, furnishes a sample of a cultivated form obtained from Myohaung—the largest Core grain yet examined—which fully supports all that has been stated above. It is steel grey, deeply grooved, with a loose shell and pronounced basal swelling the Deputy Commissioner desenbes this as "the cylindrical form," but the Deput Commissioner desenbes this as "the cylindrical form," but direal form (our settoncarps) described above, but is a monster form of the ordunary cultivated open-shaped grain.

In the Ayankeya District three forms of Cox occur—two wild and one cultivated. The water has not seen any specimens of these, yet has no reason to doubt but that they would answer very much to the types described under Akya D. One of the wild forms is larger than the other and is known as passes or kalinsee, while the smaller form is the chitsee. The edible form is also known as chitsee, and is both eaten and made into beer.

TENASSERIM DIVISION

In the Amherst District both the round and cylindrical forms are grown, the former being eaten, and the latter used for ornamenting ladies' dresses A wild round form is said also to evist. Samples have not been communicated, but the Deputy Commissioner reports that both are known as ker.

In the Shwe-gyan District no form of Coix is known

In the Taung-ngu District it is stated that the cylindrical form grows wild, while the globular is cultivated: both are known as kyest: the former

while, while Nos 4,5,6, and 7 are used for ornamental purposes, and No 4 is extensively eaten. It is worthy of note that of these samples only those cultivated, viz., Nos 1, 2, and 4 have the shell or involucre furrowed—the others are smooth and shining (1) Kairk is a dark brown or bluish black pol shed grain of the pear-

shaped scries.

Onpio Or

Arakan. 1689

Tenasserim, 1690

| COIX lachryma | Job's Tears. |
|------------------|--|
| FORMS OF. | (2) Kaletk Kank-nyin, the same as the last so far as the appearance of the grain goes (3) Kaletk & -2 as "malt (4) Kaleth f grain nit (5) Expending the same as the last so far as the appearance of the factor of the same shape the half that sure in the chees the factor of the factor |
| ASSAM 1091 | of the steel grey whites are quite as large as No 7, but lew or the In the 5 cultivated, t n in Burmese as bular syrithilition the cylindrical the cylindrical the cylindrical the cylindrical the cylindrical distes, where the cylindrical is sold for Rt a bushel and the cylindrical distes, where the cylindrical is sold for Rt a bushel and the cylindrical distes, where the cylindrical is sold for Rt a bushel and the cylindrical distes, where the cylindrical is sold for Rt a bushel and the cylindrical distes, where the cylindrical is sold for Rt a bushel and the cylindrical distes, where the cylindrical is sold for Rt a bushel and the cylindrical distes, where the cylindrical is sold for Rt a bushel and the cylindrical cylindrical distance in the cylindrical sold is a state of the cylindrical distance in the cylindrical distance is sold for Rt a bushel and the subject. Sir J D Hooker remarks "A great deal of Cove is cultivated in the subject. Sir J D Hooker remarks "A great deal of Cove is cultivated in the kernel is sweet, whereas the wild Cove is so hard that it cannot be broken by the teeth, each plant branches two or three times from the base, and the teeth, each plant branches two or three times from the base, and state the colling of the cylindrical distance is a second colling. Sir J D Hooker remarks "A great deal of Cove is cultivated in the kernel is sweet, whereas the wild Cove is so hard that it is sold, and the kernel is sweet, whereas the wild Cove is so hard the subject of the subjec |
| i í | admit of its being used for ornamental purposes |

mit of its being used for ornamental purposes
"Samapre'—Pear shaped in form resembling Sipia, but smaller in size. This dark brown regular grain looks at first sight remarkably like some of the forms of black rice. It is about the same size and is pointed at both extremities It is considerably like an elongated caranay.

| Job's Tears | lachryma |
|--|--------------|
| "" Kadatha" Almost globular in form, of a mottled brown and gree colour. The most marked pesuliarity of this grain is that it is dark brown hile the Signa form in the lower half and yellow or straw-coloured in | |
| the upper "'Kass' -Globular n form of a light grey or yellow colour. This is the most common variety The Naga hill samples, examined by the writer, fully support the | 1 |
| purposes It may also be added that the average clevation of the Naga and Khasia hills may be put down at from 3,000 to 5,000 feet where | • 1 |
| as the smooth-shelled forms are met with chiefly in the marshes of the plans of India and Burma. The white forms of the Khasia hills are harder, more polished and less furrowed than the cultivated white form from any other part of India, but they still preserve the character assigned collectively to the cultivated forms. From the Khasia and Jantia hills two samples of Cox have been received both of the milk white kind. A large and a small grain from the latter resembles very much the small white grain obtained from Mergui (No. 4 above) only | Khasia Hills |
| The dark coloured forms are said to boil solter than the white and the | .} |
| smaller of the two white forms "is slightly better flavoured than the larger". Food — This curious griin might almost be said to be unknown to the natives of India generally, except as a weed of cultivation. To the hit ribes on the eastern frontier, however, it is an important article of food with the Tankhul Nagas of Manpur it might, indeed, be almost describe as the staple article of diet. In several districts of Burma it is also regularly grown as an article of food. Mason says the esculent Cox cultivated by the Red Karens is parched like Indian corn. Of the Bassen district Mr. W. T. Hall (Director of Land Records and Agretular reports that it is soan in gradens, the crop ripening in November. The produce selfs for k2 to R ₃ tubshel. This officer has also forwarded to the writer numerous reports received from the Commissioners of the various may be here reproduced. — The modern of the method of cultivation may be here reproduced. — The modern of the method of cultivation may be here reproduced. — The modern of the writer district developed for about 7 to 8 days, when whits froots appear. They are then placed in the ground. In some cases the roots do no appear till root 15 days. 2 and, at the place where the plantsare to be grow furrows are formed and the seeds are laid on the earth which is fix mixed with cow's dung, afterwards the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up with a little delicate of the seeds are covered up wit | FOOD 1692 |
| • become | s (|

2 K

cause the plants to yield another crop and thus to last much longer?

Sperking of the cultivation pursued in Akyab the Deputy Commus soner writes fol the Myohamet constably with reference to the form which he calls "the cylindrach"," but which, eccording to the samples discussed above, is a large loss shelled grain of the pear-shaped series —

This will

49⁸

COIX Iachryma

Job's Tears.

FORMS OF.

"The cylindrical is sown by the wild hill tribes on Kaung land or on the slopes of hils. They do not till the land for this purpose, the seeds are thrown broad-cast, and no care is taken of them. In times of scarcity of food the cylindrical are caten, but now they are only used as ornamis for their dresses." The Deputy Commissioner of Kyaukpyu writes regarding a beautiful hard round form which is collected from the wild plant and used for ornamental purposes. Of the cultivated forms he says this is Known as Chittee. "It grows in June and July and dies in November and December. The plant is 4 or 5 feet high and like a reed". But a smaller, more deheate, wanters is a cultivated, which he remarks is eaten and also used in the manufacture of the small between Known as Khanag." He adds, "The seed has to be cleaned and has the taste of maize." Of the two kinds grown he says. "The plant however, differ widely ir other respects, and I am unable to say if the belong to the same variety or not."

Charactera or the Edelia Politar Gasin—On breaking the outer shell, a Charactera or the Edelia Character.

CHARACTER OF THE EDIBLE GRAIN—On breaking the outer accounty-shaped grain is obtained which, Professor Church says, bears on being cleaned the proportion of 1 to 4 to the total weight of the unlusked

article. The Professor gives the following analysis-

Composition of Job's Tears (Husked)

| Water | | | | _ | | 13 2 | 2 02 | 49 | gr |
|--------|------|---|-----|---|--|------|------|-----|-----|
| Albumi | | • | • | | | 18 7 | 2 ,, | 434 | ,,, |
| | | | | | | | | | |
| Starch | | | | | | 583 | | | 37 |
| Oil | | | - 1 | | | 5 2 | 0,, | 304 | 12 |
| | | | | | | | 0,, | 105 | 22 |
| Fibre | | | | | | 15 | | | |
| | | | | | | 21 | 0,, | | ., |
| Ash | | | | | | | | | |
| | | | | | | | _ | •• | |

"The nutrient-ratio is here I 3'8, the nutrient value 89" From these facts it may be inferred that the grain is not likely to prove of greater co-

sequence of e will grow and coarser it is sold for

ior hospida to the control of the control of the control of the control of the certain the control of a long list of names for the plant and grain in nearly every vernacular language of India and Burma, an indication is given of an ancient cultivation of India and Burma, an indication is given of an ancient cultivation of the certain the ce

I f this, ossible abanant has pted as

In 1th

partly also be region ne conn occur

anywhere in India proper (2013)
vated anywhere in India at and are

vated anywhere in India at
Hills some five or six forms of the loose-shelled and jurroweu and are
grown, but the plant is stud to be rarely, if ever, met with in the wid
grown, but the plant is stud to be rarely, if ever, met with in the wid
state, while the cylindrical is reported as wild in the Naga Hills but never

| | Job's Tears | | | | COIX lachryma. | |
|-------------|-------------|--|-----|--|-------------------|-----------|
| cultivated | , | | , , | | , | FORMS OF. |

municated b from the exte whom he is

words are - the expenditual torus is only found in the wild state and is called orked. This plant is never cultivated but is found growing on the edges of terraced cultivation, and in the small gardens in the villages. The leaves resemble closely those of the cultivated species, but the plant is smaller and the stem much tougher. The seed is used, in place of

the beginning of the world rats brought paddy and sikr i from Japyo Mountain Man on seeing these products, took the paddy for himself and left the sikra for the rats" Japvo is the highest peak of the Naga system where neither wild rice not wild convocur. The writer does not recollect hay ng ever seen the cyl ndr cal form in the Naga Hills, although he collected numerous samples of the globular, but all under such conditions as to lead him to the oninion that they were cultivated forms or at most only escapes from cultivation

Medicine -In some parts of India medicinal properties are assigned to the grain, as, 2000 given in strange

. .

A Cambbell)

Domestic Us

Medicine 1003

DOMESTIC. Necklaces. 1001

ıcal

made in the Nepal Larn the harens cover their dresses with the

Earrings

1605 Artificial flowers.

1606 Laces. 1607 Bugle.

trimming 1698

seeds suitable for the above purposes The writer was not able at the Rosary beads. time to furnish these gentlemen with samples of the cylindrical seed to which repeated reference has been made above, but he gave them samples of the ordinary edible pear-shaped form They seemed to think there might be some prospect of even that form coming into use On being might be some prospect of even man form coming may be shown the Karen ornamented dresses they professed a firm conviction that the cylindrical grain would find a ready sale. This led the writer to show these garments to Mr W T Thiselton Dyer, Director of the Royal Botanic Gardens, and in consequence a requisition was in due course forwarded to the Government of India asking that a thorough

COLA acuminata.

Job's Tears: Cola Nat

DOMESTIC

identified as Polytoca Wallichiana, but have since been determined as C lachryma war stenocarpa. Subsequently, numerous samples of Job's terrs, from every district in Burma, were obtained, and it has transpired that the state of the state

PRICE.

form would afford the manufacturer of laces, &c, a choice of two forms which might be elegantly combined

PRICE OF COIX GRAIN—This has been variously estimated at from 8 annas to R4 a basket, but it seems probable that were a regular destablished, which would pro-

. It would have, however, to be be cultivated without losing

as decorative articles The
the produce
ox lachrmal,
il) to cultivate
cultivation of
tell, and were
d above, their
and, the price

heing cultivaent the plans
ent the plans
also in lower
Nepal, to such an extent that no fears need be entertained of the demand,
for some time to come, exceeding the supply.

Coke, see Coal

COLA, Schott ; Gen Pl , 1 , 218.

1701

Cola acuminata, R Br , STERCULIACEE

Sym.—Sterculia Acuminata, Beaux Reference.—Rew Reports, 1880, p. 14, 1881, p. 101 Christy New Com mercial Plants, No. 8, p. 5, 7 Treasury of Belany, p. 311, Smith Dit Econ Pl. p. 127; Balfow, Cycl of India, U.S. Disp., 15th Ed., p. 1754; Pharmaceutical Society Journals

p 1754; Fragmaceutical Society fournais

1 1 == 174 a. Tac- At- = -03 Log boom agree mentally intro-

Cacao) It has been said the beverage made with Cola passe usen

ities of the world as

I and Schlagden-

There are many tracts of country in India that seem likely to prove suitable to Cola cultivation, and doubtless this subject will in the future receive a greater degree of attention than it has as yet obtained from the Indian planters

Officinal Calchicum

COLCHICTIM autumnale

1702

1703

COLCHICUM, Linn., Gen. Pl. III, 821.

Colchicum autumnale, Linn.; Liliacere

OFFICINAL COLCHICUM. MEADOW SAFFRON OF AUTUMN CROCUS.

References.—Pharm Ind , 243, Flack & Hanb. Pharmacog , 609; U. S. Dispens, 15th Ed , 409, 409; Bentley & Trim, Med Pl , 288, 200 and 10d. Preface, 282; ok of Pharmacy, 1874, p 103 clop , 808 , Balfour , Morton, Cyclop . Agrs ,

400 Habitat.-The plant grows in the meadows throughout Europe Attempts have been frequently made to introduce several species into India, but with very little success Mr. Baden Powell says that in the Paniab a species of Colchicum is known as Harantutiva The fresh corms and the seeds of Colchicum are officinal.

C. sp.

suringan, Hinn . 74 Ures ones

variety and the bitter, but adds a third form or rather substitute which he says is the sheed bulbs of Narcissus tazetta, which are imported from

chicum variegatem, Linn , a native of the Levant and not known to be found in Kashmir or Persia. Planchon in his account of Saringan gives a figure of C. vanegatum, Linn , in the Bot. Meg., t. 1028

References - Royle, Ill Him Bot, 385; Baden Powell, Pb Pr , 381;

Yournal, April 1871

HISTORY. 1704

COLDENIA procumbens,

The Surman: Trailing Coldenia.

HISTORY.

Mir Muhammad Husain tells us in his Makhaan that the white is the best. and that it is not bitter, next the yellow, both may be used internally, the

and aperient, especially useful in gout, theuniatism, liver, and spice gout they combine it with aloes, with ginger and pepper it is lauded as an aphrodisiac, a paste made of the bitter kind with saffron and eggs is applied to rheumatic and other swellings, the powdered root is sprinkled on wounds to promote cicatrization Two kinds of Suringen are met with in Indian shops, bitter and sweet European physicians in India who have tried the drug consider the sweet Hermodactyl to be mert or nearly so, and the bitter to have properties similar to Colchicum

MEDICINE 1705

Medicine.- § "Purgative, diuretic, sedative, chologogue, doses 2 to 8 1 Anev and grains, use a heart dise iuna constipatio Lall, 1st ci ary, tter, Fubbulpore the latter

Assistant-Surgeon, Meerul) Colchicum luteum, Baker, according to Aitchison, in a note furnished to the writer, "occurs in early Spring in the Panjab from Campbellpore, across to Abbottabad, the Gullies, at Murree, and in Kashmir extending

to Zoia pass

But the root of Probably it is the root of this that is Haran-tutiya Merendera Persica, Bois (Syn Altchisonii, Hooker) may be mixed

SUBSTITUTES 1705

SUBSTITUTE OF SCRINJIN - Dr Dymock says that the sliced bulbs of the true Narcissus (N tazetta) which are imported into India from Persia as a substitute for Surinjan are easily recognisable He remarks this drug ' m wy be at once detected by its larger size and tunicated structure The taste is bitter and acrid the substance amylaceous and very sim lar to that of the Hermodactyl It is used as an external application and, according to the author of the Makhsan, has properties very similar to those of surinján-i-talkh Value, annas 3 per fb

COLDENIA, Linn , Gen Pl , II , 841.

1707

Coldenia procumbens, Linn , Fl Br Ind , IV , 144; BORAGINES

TRAILING COLDENIA tr tr. . Riecka Sind, Tre-Vern _T- Appendix . A -324

Habitat. - A small annual weed, usually quite flat, common through out tropical India, it generally grows on dry rice-fields during the cold season, disappearing about the beginning of the periodical rains. It is common in the hot dry parts of Ceylon Distributed to Asia, Africa, Australia, and America

COLEUS

| Colebrookia, Country Borage, | romaticu |
|---|----------------------------------|
| Medicine.—As a medicine, equal parts of the dry Plant and fenugreek SEDS rubbed to a fine powder, and applied warm to boils quickly brings them to suppuration $\{unish\}$. The fresh leaves, ground up, are applied to rheumatic swellings $(Murray)$ | Plants |
| COLEBROOKIA, Sm , Gen Pl, II, 1180 | } |
| A Himálayan genus, comprising only one species, and that one of the com- monest and most abundant plants in the Lower Himálaya and mountains of India, ascending to Agood feet in allituide | Leaves 1709 1710 |
| Colebrookia oppositifolia, Sm., Fi Br Ind., IV., 642, Labiath Vem — Panira, Hind., Shakardána, Phisbekkar, duis, samprá, sádli, | 1711 |
| • | |
| References - Royb, Fl. Ind., Ed. C.B.C., 457, Voigt Hort Sub Cal, | |
| Habitat —A shrub with grey bark, common on the outer Himálaya, | 1 |
| Mysore It is now viewed as not even worthy of separate recognition as | 1 |
| a variety Medicine.—The leaves are applied to wounds and bruises (Stewart) "The down is used by the Paharias to extract worms from bad sores on the legs (Gamble) A preparation from the root is used by the Santáls | MEDICINE 1712 |
| in epilepsy (Campbell) Fodder—The leaves are used as fodder for cattle (Balfour) Structure of the Wood—Greyish white, moderately hard, close- grained Weight 46th per cubic foot. It is used for gunpowder charcoal | FODDER 1713 TIMBER 1714 |
| COLESEED or COLLARD, see Brassica campestris, Linn, var. Napus, B No 810 | -,- |
| COLEUS, Lour , Gen Pl , II , 1176 | 1 |
| Coleus aromaticus, Benth , Fl Br Ind , IV., 625, LABIATE COUNTRY BORAGE | 1715 |

Syn —C Amboinicus Lour , Voigt, Hort Sub Cal , 450; Plectran-Thus aromaticus, Roxb ; Fi Ind , Ed C B C , 456 Vern -Pathor chur, Hind Patter chur, Beng Pathor chur pather chur, oma, Bome Pathur chur, Mar Pathana bhedi, Sans in Flora Andarica, karpira-calli is apple di to this plant, but Dr Moodeen Sheriff is of opinion, that the name is more in use for

References -Dals & Gibz, Bomb Fl Supp. 66, Pharm Ind. 168, Moodeen Sheriff, Supp. Pharm Ind. 114 51, U. C. Dutt, Stat Staf Hund, 313, Dymack Vidat Med V. Ind. 505 Dury, U. Pl. 2 Lisbon, U. Pl. Bomb, 168, Royle, Ill. Elim. Bot, 1, 303, Balfour,

Amsochilus carnosus, than any other name

Cyclop

COLLOCALIA

Inter

1717

FOOD

Plant.

1718

1710

FOOD.

1721

IZLI

Country Borage; Birds' Nests.

| ļ | Habitat A native of the Moluccas, cultivated in gardens throughout |
|-----------|--|
| | India; has a pleasant aromatic odour and pungent taste |
| MEDICINE. | Medicine. The PLANT "is employed in Cochin China, according to |
| 1716 | , |

other suitable vehicle. In his own practice he observed it produce 50

other suitable vehicle. In his own practice he observed it produce so out the suitable vehicle. In his own practice he observed it produce so out the suitable vehicle.

proand has the

much larger quantity than is usual in Bombay.

Special Opinions — § "Propressed JULYS of the LEAVES is considered as
an anodyne and astringent, and applied over and around the cyclids, in
cases of conjunctivitis" (Anund Chunder Hookerjee, Assistant Surgen,
Noakhally) "Said by Sanshit writers to have a specific action on the

bladder and to be useful in unnary diseases, vaginal discharges, & (U or and to be useful in unnary diseases, vaginal discharges, & PPP

pep

able sav

fragrant, they are frequently eaten with bread and butter, also brused and put into country beer, cool tankards, &c., being an excellent substitute for Borage."

Coleus barbatus, Benth , Il Br Ind , IV., 625; Wight., Ic , 1. 1432.

Vett.-Garmal Bows

References.—Venet, Hort, Sub Cal., 450; Thmattes, En Ceylon Pl. 338, Dals & Gibs, Bomb Fl, 205, O'Shaughnessy, Beng Dispens, 401, Drivry, U. Pl, 154, Lisboa, U. Pl, Bomb, 168, Royle, Ill Him Bot., I, 101, 103, Religur, Cyclob

Habitat 4 -- Charles -- Charles and of the Sub-3,000 feet it is also was introventable.

at Bombay for the roots, which are pickled (F. Graham)" (Driry)-Lisboa says that the pickled root is much used by the Gujardiis.

COLLOCALIA.

It would appear that there are two or three species of Swiftiet which form edible nests. Dr. Jerdon is of opinion that the best nests are obtained from

| Products of India. | 202 |
|--|----------------------|
| | LOCALIA nidifica. |
| synonym of these species, and has, therefore, thrown the economic facts procur- able under the names below, which are commonly given to the "Edible Bird's Nests." | FOOD |
| Collocalia nidifica, Gray, Cypselide. C. High, Hossfeld. The Edible Bird's Nest, Salangane, Eng., Nids de Tungur, Fr., Indianische-local-rester, Germ.; Nidi-di-Tunching, H., Nidos de La China, Sp. Sometimes called Edible Swallows' Nests, the bird is more properly a Swift than a Swallow Var | 1722 |
| | |

NDAMAN ISLANDS. 1723

small bracket attached to the side or roof of the cave, of a semi circular form, with a radius of about 13 inches, and regarding the matter of

approach John Lawrence Island, east coast, opposite East Island The cave is Indden by a mangrose swamp. Strait Island, South Fount, one cave. South Button Island, several caves, jedding the best quality of nests. About three miles inland, at the north end of Stewart's Sound, large caves are to be found in a hill, from which the greatest quantity of our rests are obtained. "In Bornes, from which the prestic quantity of our rests are found in the contract of the state found in the case of the state of the sta

COLLOCALIA ridifica.

Rable Bhas' Nests

172

is explored, many more mest-visiting sames will be found. All our present knowledge is derived from the Malays, who, through feet of the Andamanese, did not dare to stand the interior. The explorations

should be confined to hilly commy, where the great line Emergica forms. tion predominated NICORAL ISLANDS-Mr. deRepostorii, in the cilial report of the

Nicolar Editie Bods' Nests, remarks: "The best nests I found at Autchall. They were entirely somewhite, and of the best quality. The next best quality I have got were from the Island of Bombotz. This island I have not personally visited," but he saids, the nests from it "are crite free from forting matter, and have not the same sonwerbine beautiff colour as the cost from Kaminal. The nests from Kaminal zeround and egg-formed, while three from Bomboks are four. The the section of an oranze"

"The third quality I have is from Sambeling. This is white emorph, but minimized with links words or gracual states. These measure of good quality, but noted distancy to separate the states. The formit quality I got from the Car Naohar from a care in Dread's Bay in the 7-4-stord's him to the north end of this island. These mate was surworthless for purposes of trade, consisting of the links weeks which are mentioned in the resis from Sampelong, These resis are, however, fastered together by exactly the same glothness matter which farms the

ness first meanings!"

"The Island of Katalall is mostly formed of coral formation and saidstone in all different stages, oil, fluty, and was foreign. The island has كالمان والمان المان والمان mg : at colde the earth. In these cares dwe the bars and the Erric swallows. The Light of the sun nerse shares there. The ground is said to need on If you like a to said mapped a sailer the trainfight his tree to come the ways of the pasters, that have taken a mor to the batts, giment's Line to read increive, thest is most erred he line and rur se the finds long-maped extrements of the swallows together with the familiers inter the the raising bods. This is the grant. The sections area इत्त कर्म सद्दर्भ शस्त्र, क्ष्म र प्रव दे प्रव कि क्ष्म स्था से क्ष्म के क्षेत्र कर्म हैं क्ष्म side on the althouse the proportion relicates while like these, the lists

ETTAL 1725

head of the with matter appears one of her white land next." IN BURKE - Mason says of C. Schillege (C. Section Tile property spens ower shouldn'y or part of the coast of the Mainta Ferral is the Number lelands, and the Morgan Arch policy, and so high as or common root isless of the stockers portion of the case of Arach, when the root isless of the stockers portion of the case of Arach, when the roots are aroundly gathered, and exposed to Clima. From an inte Tange of course we have seen on other species than finishers, our does a spect that any other has been cherried; and I have examined a mantade both of the admissand of the stoney taken from the news, collected in the Nancare and preserved in some all of which were of the same spaces. Sale with appears to be C. which a the market of the sale of the market of India, though hitherto embeered spon the costs; and 2 is

worshy a some that C faithful dies an appear in brieflere bailere bestellt and in this country. (Researce grant by News and in this country, (Researce grant by News and in the country, and the second by News and in the country, and the second by News and in the country. The Third C facilities a country to the a died that C facilities a country to the died that C facilities as country to the second by the country. these provinces. The Karens in the vales of the Tenasseria is the lumine of Taroy are wal ampaired with the brid and they are it cross the countries to and from the interior every year. That if if the same species there can be no doubt, for the Koren same of the bod

a the white smaller, from an white below."

Edible Birds' Nests.

COLLOCALIA nidifica.

In the Burma Gazetteer a list of the birds found in the province is given, and among these are included three species of Collocalia, viz, C inno-

minata, Hume, C spodiopygia, Peale, and C linchi, Horsf
Malabar Coast—Very little of a definite nature can be learned
regarding the edible swallows' nests collected on the western coast
That are said to be food at Dangar North Kangar and a sen-

MALABAR COAST 1726

COLLECTION.

tend that they were made of a sea weed which the bird collected for the purpose and chemically changed in some my sterious way. Ure (Arts, Manufactures, and Mines) says. "The nests are made of a particular species of sea weed which the bird macerates and bruises before it employs the material in layers so as to form the whitsing gleatinous cup-shaped nests so much prized as restoratives and delicates by the Chinese." On the other hand, many recent writers discredit this theory and believe that the gelatinous material is either the natural salin a of the bird or a substance that the better qualities of the nests are found in caves far removed from that at the better qualities of the nests are found in caves far removed from the sea. Some of the nesting caves of Borneo are 140 miles from the sea. Mr deRopstorff points out that there are no edible nests in the Nicobar settlement, but a few miles off in a richer tract of country where meet life abounds they are plentiful. "It is thus," he says, "in places

fresh, but when old brownish Mr Portman remarks "The this matter, which resembles issueuts) resembling Carrageen, an a weed, but have never seen the Another theory is that the bird

Another theory is that the bird

takes about a month and the so, the collectors should wait

go out again, taking care to observe exactly the same order in their rounds. The nests may be col-

COLLOCALIA nidifica.

Edible Birds' Nests

COLLECTION

lected until the commencement of the rains, when the collection should cease, and the brids be left to breed Although the great demand is for the white nests, still it may be remarked that the facility attachments of the grass nests, and the old nests gathered in the November cleaning, may be sold locally at R5 per seer, and should, therefore, be collected Each collection averages about 52h of nests. He then proceeds to state collection averages about 52h of nests. He then proceeds to state

carefully

carefully in their bag, from which, at the end of the vork, they are transferred to a box provided with a lock "The greatest care is necessary in detaching the nests from the caves,

The greatest care is necessary in detaching the nests from the care that they should not be broken or soiled. After being brought into the care is not be able to be

Cooking Nests. 1728

to pieces and cleaned After this they are boiled in clear chicker-both until dissolved, a process occupying about two hours longer. The usual allowance is one nest (value K1) to a teacupit of soup Any clear soup

TRADE.

who reside in Rangoon They recognise three classes -

'No 1, large, pure, white nests, averaging from R110-115 per viss=2 1th.

No 2, clean, but slightly coloured nests averaging from R100-140

a viss

se of the
e second
the more
japanese
m a sea-weed an artificial nest

and and with hem

for two

ard og

Canton,

do not use the nests but they prepare from a sea-weed an artuncial nest called Dichin-rehan, which they export to China. Of the Ratingiri district it is stated the right to collect nests is farmed out to Goanese, and fetches about R28½ a year. The Andaman contractor used to pay R2000, but last year, owing to the contractor having thrown up his contract, the Government worked the nesting and realized R4 900.

CUANO. 1730

GUANO IN THE SWALLOW CAVES

An inquiry was instituted into this subject, and Mr deRoepstorff

rupees per annum I his opinion was explessed, e. ding the Nicobar islands only, so that if to this be added the possible supply from the Andaman Islands, there would appear to be no reason why India might

Kachú or Taro

COLOCASIA antiquorum.

not at least meet all its own demands for guano manure if not open up an export trade in the article.

Collodion, see under Gossypum

COLOCASIA, Scholl , Gen Pl , III , 974

1731

Wight, Ic, t 786, Aroidem

Colocasia antiquorum, Schott ; DC, Mono Phanerog, II, 491,
TARO, EDDOFS, SCRATCH COCO, EGYPTIAN ARUN, COCO, KOPEH

1732

Sometimes but incorrectly called YAM

Syn —ARUM COLOCASIA Willd, Rozb, Fl Ind, Ed CBC, 624

Habitat —Wild over the greater part of trop cal India, and also cultivated throughout India on account of its corms, which are used as an its grown at places

COLOCASIA antiquorum.

The Kacha or Taro.

floras of the South of Asia, we cannot doubt that this plant is wild in India, as Roxburgh formerly, and Wight and others have more recently asserted likewise in Ceylon, Sumatra, and several islands of the Malay Archipelago"

Engler (in DC , Mono Phanerogm , vol II) describes some seven vaneties of this plant, three of which are apparently met with in India -

a typica, Wight, Ic, t 786. Arum colocasia, Roxb Fl Ind, El

f. 1, cultivated form

4 nymphæifolia (Arum nymphæifolium, Roxb, Fl. Ind., El. C.B.C.,

larger than any of the varieties of Colocasia." (var typica above), "yet the leaves are narrow in proportion to their breadth." The only good character by which to know this form "is the shortness of the club of the spadix" "Every part of this plant is eaten by the Hindus"

A good deal has been written regarding the cultivated species of Colocasia, but it has been found impossible to discover what species, still less which varieties are alluded to On this account it has been deemed desirable to compile the economic information here given from such authors as could be depended on for the accuracy of their general information, and to thus leave for future research a more detailed description than

will be found bere

The following facts seem to refer to var typica MEDICINE

Medicine - The pressed juice of the petioles is styptic, and may be used to arrest arterial hæmorrhage Dr Bholanath Bose reports very highly in favour of this property, and states that the wound heals by first intention after its application (Pharm Ina) It is sometimes used in emache and otorrhæa, and also as an external stimulant and rubefacient

by the natives Special Opinions -6"The juice expressed from the leaf stalks of the of affermed glands

of aloes and wasps e seen o fresh

rthin 2 a foot-

FOOD 1734

1733

The Bish Kachú.

COLOCASIA virosa.

spinach, but, like the root, they require to be well cooked in order to destroy the acridity peculiar to Aroids A considerable number of

FOOD

carrot-shaped, often weighing several pounds, and forms an important article of food among the lower classes, where quantity and not quality is a desideratum. It is usually served fired in ghi or boiled and pounded into a paste, and also in curries. There are varieties that are very small, hardly weighing more than a quarter of a pound." In the Manual of Cormbatore it is stated that the corms (apparently of var symphaticlas) often weigh as much as 70 to 80h each, and that an acre will yield so maunds (of 2,bh), worth 12 annas a maund. The tubers are used by the natives of Bombayin curries, &c. They form the common food of the inhabitants of Travancore. The Malays hold it in high estimation (Balfour)

§ "Is considered very nutritious by the natives, who use it in their curries" (Honorary Surgeon P Kinsley, Chicacole, Madras)

Colocasia cucullata, Schott

1735

Syn for Alocasia Cucullata, Schott

1736

C. indica, Engl, DC, Mono Phanerog, II, 494. Syn. for Alocasia indica, Schott, which see, A 809

..

This plant is said to be specially cultivated in Brazil for its esculent stems and small pendulous tubers. It is known as Man saru in Orissa, and is there used in the treatment of piles.

C. macrorrhiza, Schott

1737

1738

Syn. for ALOCASIA MACRORRHIZA, Schott

.

poss

prac rubbed on the head, sometimes cures intermittent fevers after every other remedy has fuled." The active principle is very volatile, so much so that by the application of heat or by simple drying, the roots become innocuous

C. virosa, Kunth, DC Mono Phanerog, II, 495, Roxb, Fl. Ind, Ed C.B C, 632 (under calla)

Vern -Bish Lathi

This plant, which is a native of the Lower Provinces, is the only member of the genus which the natives of India regard as poisonous. It is sometimes used medicinally, but is never eaten

COLOCASIA VICOSA.

Poisonous Properties of Aroids

CHEMISTRY 1739 Chemistry—Through the kindness of Messrs Pedler and Warden (Professors of Chemistry in the Calcult's University), the writer has had the pleasure to receive an advance copy of their paper's on the chemical properties and medicinal uses of the species which, by the early botanists, were all treated as belonguist.

been thrown into some half a

paper was to investigate the and the enquiry was suggested on teceiving, from the course of the Dibrugarh. Some portions of rive Bish Kachu tubers and leaves with the following statement. A cooly woman administered some of premising kachu to another sick cooly on the same garden, but the max high remaining was sold to the same state. The same state of the same state. As econd case of poisoning by kachu was referred to the Chemical Examiner's Department, in this case sices of kachu tubers were introduced into a jar containing "goor."

writers on economic botany say that the bish kachu is Colocasia virosa, and accepting this to have been, in all probability, the plant Pedler and

bolic extract was prepared and found to have no poisonous effect line some result followed on the administration of a distillate which was found to have no acrid taste, and, as with many other vegetable substances distilled aith water, it was found to contin a trace of hydrocanae and "It is possible, however that certain varieties of ARUM may contain larger amount of prussic acid, as, for example, the A segulation of the West Indies, which is stated to furnish a juice, two drachms of which however that certain proceed facts in a few hours. The tubers left in the retor after distillation with water were still physiologically active, indicating that the activity proceed in the proceed facts of the proceeding with activity of the proceeding of the proceedings of the proceeding with a state of the proceeding of the

i, was very much uce any decided id cated the pre-

sence of a large amount of potassium and magnesium calcium was also present, but we ruled to obtain indications of sodium. The accounted of certobonic, phosphoric, hydrochloric, with ruces of sulphuric, and We also obtained from the dred tubers very mixed quantities of potassic inties on that when they had been incentred they behaved very I ke

Poisonous Properties of Aroids.

COLOCASIA VITOSA.

tinder, containing saltpetre The examination of the ash thus failed to afford us any clue to the physiological action of the fresh tubers."

anord us any clue to the physiological action of the fresh tubers."

"It now occurred to us that possibly the painful effects produced by
Army when in contact with the tongue, &c, might be due to mechanical

in cold distinct of nyurochions and a first appears to us to be no reason to doubt the fact, that the whole of the physiological symptoms caused by Anuss are due to these needle-shaped crystals of ovalate of lime, and that the symptoms are thus due to purely mechanical causes

crystals on microscopic examination of dried Arums as we had found in the fresh tubers. We explain this apparent anomaly in the following simple manner. In the fresh condition of the tubers, the bundles of crystals of

in the drying of the tubers, the

rer a smaller area. And thus,

instead of each crystal acting as a separate source of irritation and penetrating the tissues, the bundles act as a whole"

The posionous effects of certain aroud tubers are therefore the result of mechanical irritation, similar to that produced by cowage (Muenna puniens) or to chopped hairs criminally mixed with food. It would be interesting to have this line of enquiry carried to its final issue in a systematic examination of all the plants, like tribarb, which contain raphides. It is just possible that the crystals of oxalate of lime may

chemically analyted, but it may be said we have not advanced much nearer as full understanding of the chemistry of rhubarb connected with its physiological action than we were before. It is thus probable that the results of Pedler and Warders' analysis of the arold tubers may have a more extended influence on therapeutic science than they seem to have realized

Colocynth, see Citrulius Colocynthis, Schrad : CUCURBITACER.

Colombo (or Calumba) Root, see Jateorhiza Calumba.

2 L

 $\begin{array}{c} {\rm COLUTEA, \it Linn., \it Gen. \it Pl., \it I., \it 505} \\ {\rm [\it 103, \it Legumnose.} \\ {\rm Colutea \ arborescens, \it \it Linn., \it var. nepalensis, \it \it Fl. \it Br. \it Ind., \it II.,} \\ \end{array}$

COMBRETUM

ovalifolium.

1740

| | THE BLADDER SENNA, NEPAL BLADDER SENNA |
|----------------------------|--|
| } | Syn -C NEPALENSIS, Sims , Bot Mag , t 2622 |
| | Vern -Brag LADAK, AFGHANISTAN |
| | References — Brandis I |
| | Habitat -A shrub of the temperate west Himalaya, Kunawar, Tibet, |
| MEDICINE Leaves 1741 | rgative, and are used to Europe as a substitute for toom They are admins tered in infusion or decoction in the dose of about half a pint (U, S) |
| | Dispens, 1017) |
| | Colza Oil, see Brassica campestris, Linn var Napus, B No 810 |
| | COMBRETUM, Linn, Gen Pl 1,688 |
| | [COMBRETACEE |
| 1742 | Combretum decandrum, Roxb , Fl Br Ind , 11, 452 |
| 1/42 | Vern Dhobela CHINDWARA Punk GONDA, OUDH, Arikota |
| | References — Roxb Fl Ind Ed C B C, Brandis For Fl, 111. Ga ible, List of Darjeeling Climbers &c |
| , | Habitat — Abundan in Bengal at altitudes up to 3 000 feet Very common in the North Deccan plateau in the North Western Prounces Tensserim and the Andamans Is said to be used medicinally, but very little is known regarding the Scattle who call it alone, make baskets from its |
| 1743 | Is said to be used medicinally, but very little is known regarding its uses of the plant. The Santáls, who call it alena, make baskets from its long thin stems (Campbell) |
| 1744 | C. nanum, Ham , Fl Br Ind , II , 457 |
| -144 | The Date of the Alberta N IV D and Po |
| | References - Brands: For Fl, 221, Baden Powell Pb Pr 350, Royle, Ill Him Bot, I, 200 |
| | III Him Bet, 1, 200 Habitat—A decumbent, low shrub of the Himdlajan terat, from Sikkim to the Panjah Medicine—Mr Baden Powell mentions this plant among his med- |
| MEDICINE 1745 | cinal plants of the Panjab |
| 1746 | C. ovalifolium, Roxb Vern -Bandi kittu tige yidala chettu, bandi kita, Tel. (the buffalo- |
| | calf tree) |
| | A common climber throughout the Deccan Peninsula, probably caten by buffalos |
| | C. 1746 |
| | |

The Spider-worts

COMMELINA communis.

COMBS, fans, brush-backs, and other smaller articles-Woods used for -

Adına cordifolia (combs) Alangum Lamarcku (cattle-bells) Albizzia stipulata (cattle bells) Artocarpus integrifolia (brush-

backs) Bauhinia Vahlii (umbrellas, rain-

caps) Buxus sempervirens (instruments, combs, small boxes), Carissa diffusa (combs) Casearia tomentosa (combs)

Chloroxylon Swietenia (pictureframes, brush backs).

0 - 40/

Cratæva religiosa (combs) Elæodendron glaucum (combs,

picture-frames) Gardenia costata (combs) G. latifolia (combs)

G [ucida (combs) Gmelina arborea (picture frames)

Olea ferruginea (combs) Platanus orientalis (pen cases) Psidium Guaya (instruments) Pyrus Pashia (combs, tobacco-

pipes) Schrebera swietenioides (combs and weavers' beams) Stephegyne parvifolia (combs) Sterculia urens (guitars)

COMMELINA, Linn , Gen Pl , III , 847.

The genus of the Spider worts is named in honour of the Dutch botanist Commelin. Commelina benghalensis, Linn; DC, Mono, 159, Comm et Cyrt, 14 Pl IV ; Wight, Ic, t 2065, COMMELINACER

> Vern -Kanshura, HIND Kanchura kanuraka, kanshira, kachradam, kanchara, Beng, Kai a arak, Santal, Chura, kanna, PB, Khanna, Sind Kanchata Sans, Deya maungireya ot diya menériya, Sing, Ho tan tu, CHINESE

> References —Rarb, Fl. Ind., Ed. C. B. C., 57; Yong, Hort Sub. Cal., 676; Througher: En. Coplon Pl., 25; Dala G. Gibb Bomb Fl., 25; Stewart Pb Pl., 25; Astribution Cal. Pb and Sind Pl., 145, Trimen Syst. Cat., 95; DeCandidie, Mono Phantergam, Ill., 159, Rev. A Campbell, Descript Cat. of the Pl. Chatta Naghur, U. C. Dutt, Mat. Mad. Hurd., 303, Muray Pl. and Direct, Sind, 25.

Habitat - " It also occurs in the penins lange, and the Deccan Dal everywhere in

Distributed to Buting, Malay, and China

Food - LEAVES eaten by the poor people as a pot-herb, especially in times of scarcity The fleshy rhizomes of some of the species of this genus contain much starch, mixed with mucilage, and are therefore wholesome food when cool ed Balfour says C polygama (a name which would appear to be a synonym for C benghalensis) is cultivated in China as a pot herb eaten in spring "The juice of the flower is used as a bluish pigment in painting upon transparencies" (Smith),

C. communis, Linn , DC, Mono Phanerogam, III , 170.

Vern - Aena Bons , Wek kyr p Bunn Stewart says that this, as also C. benghalensis are in the Panjab Lnown as Chura Eanna Balfour gives the following names Aanang kiras, kunnu kalls pillu, TAU , Venna devi kura niru kassuru, tenna mudra, tenna vedara, Tet , Valsa priam, SANS

It may be here recorded of the vernacular names given to this and, in fact, to all the species of Commelina that they require to be verified and assorted under the modern scientific names for the species of this genus.

WOODS FOR COMBS, &c. 1747

1747

1748

FOOD Leaves

I740 Starch

1750 Plament.

1751

1752

2 L 2

COMMELINA suffruticosa

FOOD

Seeds. 1753 Leaves

I751

1755

The Spider worts

Cyrlobædia of India

References -Voigt, Hort Sub Cal 677 Dals & Gibs, Bomb Fl 1511 Stewart Pb Pl 236, Aitchison Cat Pb and Sind Pl, 148, Balfour s

Habitat - A native of the hot damp regions of China and Japan From Chittagong, plants are said to have been sent to the Botan c

Syn — C CESPITOSA Roxb, Fl Ind, Ed C B C, 58 C. NUDIFLORS, Linn, as described in Roxb Fl Ind Ed C B C is Aneilema Mudifully FLORUM, Linn, the Kundali of Bengal the Malay, also to Africa, Madagascar, Mauritius, Sandwich Islands, and Australia, &c Compare this with the remarks under C. communis. Linn, and C obliqua. Ham C. obliqua, Ham., Clarke, p 19 pl IX 1756 Syn -C COMMUNIS Roxb, Fl Ird . Ed C B C . 57 Vern .- Kanjura kana HIND Jata kanchura, jata kanshira BENO . Korna kana Bijnon, Kanjura Kumaon Habitat.-This species is common over the low moist parts of Ind 1 is affection? ٠., MEDICINE Root it the leaves 1757 F000 Root 1758 C. salicifolia, Roxb , Ft Ind , Ed CBC, p 58 Vern - Jalop ppals languli, Sans , Pans kanchird, Beng ; Jalp pari, Hind ; Bir kana arak, Santal 1759 References - DeCandolle, Mono Phanerog , III , 157; U C Dutt Mat Med Hind . 300 Habitat -Common in wet places in the peninsula of India, especially in Bengal, Coromandel and Bombay Distributed to Burma FODDER Fodder -Cattle are said to be fond of this plant 1700 C scapiflora, Roxb , see Anellema scapiflorum, Wight A 1122 1761 C. suffruticosa, Bl . DC . Mono Phanerog , III , 183 Veru. - Dare orsa SANTAL MEDICINE Habitat -A native of Bengal Medicine -The root is by the Santals applied to sores (Campbell) 1762 1762

present been left in the present position The - ma a ceres d = ablance can les were largely

THE RESTED OF caives when they wish to wean them from their milk. eaten by the natives mixed with other greens"

Com and Cirl Table 1 Commelina nudiflora, Linn , DC Mono , III, 144, C B Clarkes

Habitat -Frequent in Bengal, and distributed to Burma, Ceylon and

a acc rs on the lower str buted to

Sported Femo.k. Communication

CONNAPUS

1763

Conch Shell, a species of Turbinella, <- Shella, also Beads 2. 322. Condiments, 335 S pices

Conessi Bark, see Holarrhena antidysentenca, Wall, Aportkache.

CONGEA, Rorb , Gon Pl , II , 1159

Congea tomentosa, Rorb, Fl Br Ind, IV, 603, Wight, Ic.

Veta - Tamakanwe ka yan Burm References - Kurs For Fl Burm, II 256 Roscoe in Pozb Fl. Ird.

References -Kurs For Fl Burm, II 256 Roscor in Poxb FL Ird., Ed C B G. 477 Habitat -A large climber in Chittagong and Burma. d strib and to

Stam Roxburgh says it is found also in Coromandel where it Foxes in the cold season the Chittagong plant flowering in March The Hora of British India deer bes a variety—Azurea—as cultivated in Yorth India All the species of this elegant genus are characterised by their gurpe bracts

C. villosa, Wight, Ic, t. 1479, fig. B., Fl. Br. Ind., IV, 603

A large climber of Pegu and Mergui, the leaves of which are used inedicinally (Mason, O Sangianessy, 86)

CONIUM, Linn , Gen Pl , I , 887

Conium maculatum, Linn , DC , Prodr , IV 242 , Unbellifere Spotted Hemlock, Hemlock, Eng , Cigué, Fr , Schierlings,

Vern -Showkran, ARAB , Kirdamana, Bomb

References -- Pharm Ind 104 Annsite, Mat Ind., Preface p XII;
O Shaughnessy Beng D speis: 369 Dymock Mat Med W Ind.,
13th Ed 333 Pluck & Ha b Pl vrnacog, 299, 301 U S Dispens,
15th Ed 194 484 Bent & Trim, Mel Pl, 118

Habitat -Met with in Europe and temperate Asia, common in Eng-

Medicine —Although this drug is commonly used in Indian pharmacy, and largely imported no effort seems to have been made to cultivate the

MEDICINE.

376S

ա սա այիզյա

CONNARUS, Linn , Gen Pl , I , 432, 1001

2760

1753

51. Rheede, Mal . 11. t 24

References.—Beilome, Fl. Sylv. App. LAVAII. Weght and Arr. ',
Prof. Fl. Pen. Ind. Or., 143, Tran, En. Cey. Pl., 85. Kurs., Peru.
Refort., Bomb. Gas., AVV., 330., Da's and Gibs, Bomb. Fl.,

Habitat.—A small tree or shrub of the Western Peninsula, from the Concan to Travancore, common on the Southern Ghats, very abundant in Ceslon Flowers yellow, fru t long, bright red, the tree become ng very

CONVOLVULUS

arvensis

| L 1700 TIMBER 1770 | ornamental when in fruit Oil.—The seeds yield an Oil. Structure of the Wood —The timber of this, as of root other species of the genus, is much valued for ornamental purposes. |
|--------------------------------|---|
| 1771 | Connarus mitidus, Roxb, in Hort Beng, 49 References.—leigt, Hort Sub Cal YS Gamile, Nan Tini, 114 |
| 0IL. 1772 | Habitat.—Said to be found in Sylhet and British Burms. Oil.—Dr. McLelland says that in Rangoon the seeds of the splant yeld a quantity of sweet oil. The name C. nutdoes is not referred to by the Flora of British India, butti may be presumed that the plant which yelds the 01 in outsinon is C. nameralams |
| 1773 | C paniculatus, Rovo , Fl Ind , Ed C B C., 505 , Fl Br Ird , II., 52. |
| | References -Kurs, For Fl Burm, I, 3r, Gamb e, Man Timb, 1141 Wight, Ill., t 64 |
| | Habitat —Roxburgh, followed by Voigt and Kurz, describes this as "a large timber tree," but Hooker in the Flora of British India 5 ax 511 to "a large climber" met with in Sylbet and the Khasia h II., to Chitagorg" |
| 1774 | C speciosus, McLell |
| 011 1775 Timber. 1776 | Vern.—Gerssal I dyn-laist, BLEN Habitat.—Sa d to be a large tree of Rangoon, Pegu, and Teurghot. Oil.—McLelland says that the seeds yield an abundance of seet oil. The above has been extracted from Dr. Gookes Retest of the Seeds. Seeds The name C specosus McLell was taken apparently from Esl four 5 (veletaria. It seems probable that the tree ree alluded to the C. gibbosus II sill—a large tree met with near Rangoon and in Terassem Penang and Singapore. The Burmes name Ger (Specials mangiera) evens very near to the above. Structure of the Wood.—Balfour says of C. speciosus.—It has a large, beavy, and strong timber, white coloured, adapted to every purpose of house-boulding." |
| | Conocarpus acuminata, Rorb, see Anogeissas acuminata, W.Pl., |
| | C. latifolia, Rord , see Anogeissus latifolia, Wall., A 1149 |
| | Construction and Railway purposes—Timbers suitable for, see Cart and Carnage Building, C. 632. |
| | CONVOLVULUS, Linn , Gen Pl., II., 874 |
| 1777 | Convolvulus arvensis, Linn , F. Br. Ind , IV., 219 CONVOLVULLED |
| | Sym.—C Malcolmi, Rarb, Fl Ind., Ed C B C., 19. |
| | C. 1777 |

Vern - Vers (2) kartn-bads, or by some writers hiran baddt. Pa . Hinh .

Hirn-bug. Sind Hirn-pug, SIMD References — Voyet, Hort Sub Cal, 362, Dols & Gibs, Bomb Fl 163 Stemant, Pb Fl, 150 Attcheson Cat Pb and Sind Pl, 98, O'Shaughnessy, Beng Disjens 502, Marray, Pl and Drugs, Sind, 164, Year Book Pharm, 1679, 467, Medical Top of Apmir, 150, Baden

Ponell Pb Pr 367 Habitat - An abundant weed of cultivation all over the plains of the Paniah and Western India from Kashmir to the Deccan, ascending to

to ooo feet in the Himalaya Flowers large, deep rose coloured, sweetly scented they appear in the cold season, very common on the black soil of Guarat and the Decran Medicine - The officinal hiran baddi (or harin baddi) appears to be

this plant. The roots possess cathartic properties. Murray says the roots are sometimes used by the Sindis as jalap

Fodder -Vers is a dark green weed usually found in wheat fields It is said to be greedily eaten by goats and cattle, and is gathered by village children as a fodder

Convolvulus Batatas, Linn , see Ipomœa Batatas, Lamk

C. parviflorus, Vahl . Fl Br Ind . IV . 220

Vern - Alarams, Tre A native of Assam, the Deccan Peninsula, and Ceylon, but largely cultivated throughout India

C. pentaphylla, Linn, see Ipomœa pentaphylla, 7qcq.

C. pluricaulis, Chois, Fl. Br Ind , IV , 218

Vern -Porprang, gorakh panw, baphalli dodak Pa

References -Stewart, Pb Pl , 150 , Astchison, Cat Pb and Sind Pl , 00 Habitat -A common plant in many places throughout the plains of Paniáb. Hindustan, and Behar

Food and Fodder -" It is eaten by cattle and is reckoned cooling, and used as a vegetable or given in sherbet" (Stewart).

C. reptans, Linn : see Ipomora aquatica, Forsk.

C. Scammonia, Linn . DC, Prodr . IX . 412.

SCAMMONY

Vern -Mahmudah (*), sakmunia, Pa , Sugmonia, sak ménia. Hind . SIND. ARAB . PERS

References -Kurs, For Fl Burm , II , 212, DC Origin Cult Pharm Ind , 153 O Shaughnessy, Beng Dispens , 500 Dymock, Mat Med Res , bens . rugs,

Irvine Blat Mest Laina, 14.

Habitat -A climbing perennal, native of Syria, Asia Minor, and Greece Cultivated in some parts of India

Gum resin —A gum resin imported into India It is obtained by incision from the living root. It occurs in irregular pieces of an ash grey colour and rough exterior. When broken, it presents a resinous surface, and of a shining black colour when dry. Thin pieces are translucent and

MEDICINE. Ront 1778

FORDER 1770

1780

FOOD and

1781

1782

1783

GUM-RESIN. 1784

151,

520

COPPICE or COPSE.

Plants for Coppicing

greenish It has a cheesy odour and flavour. The bazar Scammony in Bombay, Dr. Dymock states, is all false, and is made at Surat

[DC; COMPOSITE. Convza alonecuroides. Lam. ; see Pterocaulon alonecuroideum,

C. anthelmintica, Linn.; see Vernoma anthelmintica, Willd.

C. balsamifera, Linn. : see Blumea balsamifera, DC.

Cooperation Oil

1785 Cooawanoo Oil.

This oil is said to be prepared from the Chelonian reptile Caouna olivacea, Gray-see Turtles.

Cookia punctata, Hask, see Micromelum pubescens, Blums, Var

1786 | Copal Gum, or Gum Anime.

n -

much superior to that obtained from living trees. It occurs in immenies masses, found buried in the sand, far away from any living trees, and chiefly in the coast sands. There are other Copals sometimes met with Frazilian Copal is obtained from Hymenza Courtain. Madagascar Copal from Trachylobum vermicosa. West African Copal is furnished by Guibourtia copalifera, and Indian Copal from Vateria idica, who see The Australian and New Zealand Copal is the produce of Damarra sustrains (Constraine). This forms large solid masses, often found in places where the trees do not now occur, and in New Zealand is known as Kawys and in European Commerce as Damara of Cownst Pins.

Copper, see Cuprum.

1787

Coppice or Copse-Plants suitable for-

The following, among many others, are plants specially mentioned as suitable for this purpose, but those given under Hedges and under Pellard may also be added .—

Acacus arabica
Acer Campbellii
Albuzna Lebbek
Anogeissus pendula.
Bauhnia Vahlii
Carissa diffusa.
Castanopsis Indica,
C. tribuloides
Casvarina equisetifolia,
Cedrela serrata.
C Toona
Celtis anstralis

Dalbergia lat folia

Lagerstremia parvifora.
Lebdiereopsis orbicularis.
Mocas montana.
Odina Woder.
Pithecolobium dulce.
Populus euphratica.
Prosopis spicigera.
Quercus acuminata.
Q semecarpiolia.
Streblus asper
Teucrasm macrostachyum.

Helicteres Isora Hentiera littoralis

- Li -- A-bos to nd sea natural

COPTIS

| Coptis or Mishing Teeta. | | Teeta. |
|--------------------------|---|--------|
| Copra or | Khopra—The dned kernels of the cocca-nut, see Cocos | |
| | COPTIS, Salisb.; Gen Pl , I , 8, 953 | 1788 |
| The plants wi | name COPTIS has been given in allusion to the much cut leaves of the firsh have been referred to this genus | |
| Coptis T | eeta, Wall, Fl Br Ind, I, 23, RANUNCULACER | 1780 |
| C | COPTIS OF GOLD THREAD, COPTIDIS RADIX, OF MISHMI TITA | -,-, |
| | TI — Tita, Ass., Mamira, or Mamiran (Dynock) Hind, Mahmira, Sind, Pita karosana Sing Rice says that life is a corruption of tikla, Sans, "bitter" | |

References - Voigt, Hort Sub Cal, 3 MacIsaac, Trans Med and

Habitat —A small, stemless nerb, with perennial root stock, met with in the temperate regions of the Minim Hills, east of Assam © Gooper says that the plants grow on the ground among the moss around the stems of trees "From each root," he remarks, "springs a single stem, about four males jugh, bearing three screated leaves, attached to the head of the

to suggest that HISTORY, early European 1790

on the fact that mahmura is the name of a drug used in Sind in the treatment of eye diseases, a purpose identical with that for which the Mauposs was em

rium clears the sight, and as a snuff the brain, and that it relieves toothache Internally it is given in jaundice, flatulence, and visceral obstructions (Mat. Ved. West. Ind., 2nd Ed., 18)

Dymock further remarks that two kinds of the drug are at the present day met with in Bombay The best quality is only about the thickness of a crow-quill or a little thicker, it is a yellowish thizome, hav-

1791

| 522 | Dictionary of the Economic | | | | | | | | |
|------------------|--|--|--|--|--|--|--|--|--|
| COPTIS Teeta. | Coptis or Mishmi Teeta | | | | | | | | |
| HISTORY | and an about the transmitted | | | | | | | | |
| 0000 | branches at the crown into two or three heads, which terminate in tufts of lear-stalks crowded together, and not separate as in the first kind Both of these rhizomes are contorted, and have a short fracture, the centre is spongy, and the surrounding portion bright yellow and woody the property of the first kind corresponds with the description of Coptus root in the Bengal Dispensatory The second kind with the excription of that drug in the Pharmacographia. White accepting this opinion is may be here stated that considerable continuous all evision the United States of the Interesting Gature in the history of this drug that it continues to be imported from China, even although the Bengal supply reaches India through Assam Indeed, it may be doubted how far the Chinese imports correspond to the roots of Coptus Teeta. It is customary to read that the Chinese chuen-lien, and probably also the multing, are Coptus. The continuous continuous whether that plant is wide of abundant information custom abundant information custom that separate that we do not know the plant which yields the Chinese drug. In Japan Coptus amendocefolia affords a medicinal root, and thus, therefore, just | | | | | | | | |
| | possible that a portion of the Chinese drug may be obtained from one of | | | | | | | | |
| | | | | | | | | | |
| 1792 | cographia? Dr Dymock's account of the imported Chinese thicker form of the mamira of Bombay recalls, however, some of the forms of a dung sold in Bengal under the name of Kittle or kird (Kutaka Sues) Drawck thinks there is but one root sold in India under the grant with kird or the sold in India under the grant with kird or the sold in India under the grant with kird or the sold in India under the grant with the Calcutta International, and share of form of the sold in India under the grant with the Calcutta International, and share of form of the sold in the sold in India under the grant with the Calcutta International, and share of form of the sold in India under the grant with the Calcutta International, and share of form of the sold in India under the grant with the Calcutta International in the sold in India under the grant with the Calcutta International in the sold in India under the grant with the Calcutta International C | | | | | | | | |
| | ularly oct of or fre | | | | | | | | |
| 1793 | | | | | | | | | |
| | stated if even the plant exists in any part of the Chinese empire true tita sold in Upper and Western India may thus be mathed that may have found its way by re-exportation into the returns of the Chinese C. 1793 | | | | | | | | |

| Coptis or Mishmi Teeta. | COPTIS Tecta. |
|---|------------------|
| drugs imported into India, or may have been conveyed overland from the Indo-Chinese frontier to Chinese ports Hence, as far as our present in- | HISTORY. |
| | 1794 |
| sulting almost riginal properties of the ancients to Copus Teeta, since u is this imported Chinese drug that is the mambra of Upper India Further, it seems even probable that the knotty, yellow, often ramified thizomes of Picrothiza—according to modern writers the spinous mammran of the Indian hearts—may have been the drug originally so called, or at least been the Indian drug which most closely resembled the | |
| of the wildest of 100 tribes. But there is nothing in an to a copy of ference that, in accient times, there may have existed a much larger export | 1 |
| possible, however, that in later times the Chinese supply may have been | 1 |
| ne exten, iters came on, in his year, colo natives in | 1795 |
| a yellow watery juice, as every plant with a yellow pince seems to be by them considered a sovereign medicine, and all are called indiscriminately mamfaran. "He further states that the roots of Gramum Wallichianum were shown to him as a medicine called "mamfara". It has been pointed out by chemists that both Coptis and Berberis | 1796 |
| alter the same lashon as the Maussia of the ancients. But berberring as present in a great many other yellow and briter substances, and it may therefore have been a mere coincident (suggested by external appearances) that the root now called one of the same personal of the same purpose. Indeed, preceding, on been substanced of the same purpose Indeed, preceding, on been substanced, may also be found to possess that alkahod, since berberriers of the most frequently met with of all the alkahods present in vegetable substances. But even should it not possess berberrier, that could scarcely | 1797 |

Coptis or Mishmi Teeta.

HISTORY.

be viewed as militating against its having been adopted as a substitute los

a drug for which Coptas would have proved riore suitable. At the same ------ - - - the tonormant of my affections is but a Materia Medica TO IMITAR The while the drug

The late Dr. U C Picrothiza was known to the earliest Sanskiit writers.

Sansket writers, but it seems conclusively established that even the drug Coptis Teeta s but of modern introduction into Irdia. The Muhammadans were so I tile familiar with Picrorhiza that they frequently confused it with Hellebore, and may thus be readily believed to have given to Picrothiza or to Copus, when separately presented to them, the name of mamiran—the name of a drug which either or both may possibly have closely resembled. The H ndus are uniformly precise and accurate in their information regarding Picrothiza, but say nothing of Copus. The earliest writers on Indian Materia Medica who allude to Coptis attribute to the indigenous and imported Chinese drugs ton c properties of remedial value in the treatment of nervous diseases and in debility after fever, they rarely make any mention of its use as a collynum in eye affections tonic properties of Copus are possessed in a scarcely less degree by Picrorhiza, and it may be concluded that Mir Muhammad Hussain's de-

- (at 10 / face fatef ---10001 aN-ii ancert ven by Muhammadan merchants to Indian drugs, suggests fage a second the hare existence

a reg

1 -----

Collection. 1798

.~ As we neared the highest elevation, scattered trees and shrubs seemed to grow from a thick bed of dry moss and here, for the first time, I saw the thing plant growing aburdantly. The roots (from which, when breard and s eeped in hot water, the famous febrifuge is made) are embedded in moss From each roo' springs a single stem, about four inches high, bear ing three serrated leaves, attached to the head of the stalk-like compared trefol. The Mishmees gather the roots towards the end of the raseason, and carry them packed in tiny wicker work bamboo baskets to Sad va, where they are eagerly bought by Assumese and Bergali m ... the Secretary 2004-10 529 to forward

Pun Com grishmi ti d It is brought at Sad ya is estimated at a mound or a mound and a half down in small open bamboo baskets, weighing about } a china k each, an a shapping at which the and go tdps amen an hagt a 11 Th ---

e), but the smale alucers is out of all - retail price which the drug feaches Dr. Dymock says of the Bombay supply : "Both

| • | - |
|---|------------------|
| Coptis or Mishmi Teeta | COPTIS Teeta. |
| kinds of the drug come from China via Singapore, in bulk. The first is worth R31 per B, the second R2" O Shaughnessy says "Coptis Teeta has found its way through the drug-shops of Bengal, and is even occasionally exposed for sale in the Upper Provinces" | |
| MEDICINE. | MEDICINE |
| Therapeutic and Chemical Properties - Coptis trifolia, a creeping | 1799 |
| | 1800 |
| | |
| · . | |
| , | |
| •• | |
| | |
| • | |
| its influence several patients, recovering from acute diseases, manifestly, and very rapidly, improved in strength. The dose was 50 to 10 gr of the powder, or an ounce of the influsion thrice daily." Dr. K. L. Do, OIE, says. 'In this indugenous article, though a costly one, we have an adequate substitute for Columba root, which it resembles not only in its medical effects but also in its physical properties. An essence of this dright has been recently brought forward for use by Messrs. Bathgate and Co, of Calcutta." | |
| | 1801 |
| | |
| ned copies a the cood ma matter in which the frizone of Copies | |
| | |
| ا | |
| less than 8) per cent, which is more than has been met with in any other of the a | - |
| note | |
| a b | 1803 |
| The Barberry, Columba root Hydrastis canadensis Xanthorthiza ap ilolia Cogit striloia Cogit striloia | 1000 |
| C. 1802 | |
| | |

| ,20 | Dictionary by the Economic |
|---------------------------|--|
| CORAL. | Teeta: Coral. |
| MEDICINE | "Thalketrum foliolosum, DC, common at Mussooree and throughout the temperate Himalaya at 5,000 to 8,000 feet, as well as on the Khásia hills also affords a yellow root, which is exported from Kumaon under the company of the company |
| 1 | emble 1 See stated called |
| CULTIVA- TION. 1803 | manufest. CULTIVATION OF TITA.—In concluding this brief account of titá it may be remarked that luttle or no difficulty would be experienced in cultivating the plant in many parts of India, but that up to the present date of attempt appears to have been made to do so, although the retail price pad for the drug would apparently justify the suggestion that it would be found a remunerative crop. |
| 1804 | CORAL. |
| | the second of a mark of a mark of the bearing the bearing to |
| | |
| 1805 | |
| 1806 | 10 mg |

| | CORAL |
|---|-------|
| hand the state of | |
| may be described as covered externally by the outer fleshy wall and terminated | 1806 |
| or scherobasic coral. Such a coral can therefore alon- be produced in a com- pound organ sm. In the scherodermic coral each polype has a complete skele- tion of its own and may hence east independently or be combined into a colony | 1807 |
| as a source of manufe Coral. CORAIL, Fr , KORALLEN, Germ , KORAALEN, Duich , CORALLO, | 1808 |

| Dictionary of the Economic |
|--|
| Coral. |
| Habitat.—The Coral zone extends on either side of the Equator for about 1,800 miles. Mr. J. Murray, of the Challenger Expedition, has pointed out, however, that within this area the corals abound most on the |
| |
| coral luxuriates requires to have a surface-water temperature of 70 h, and to never vary from this more than a limit of 12 h. There are a few elsewhere the few of th |
| · ef-forming |
| fluences that confines the coral regions but fixes each species in which alone it is found to gr corals, the cornamental corals occur, and fuxuristing, under lower temperatures, they are found in tropical seas at much greater depth than the recl-forming. The latter class of corals grow between 5 and 20 fathoms of water. They are fulled by exposure to the sun, and must therefore be below-water level. On a tind subsiding levy will accordingly bacterials of the sun and must therefore be the sun, and must therefore be the sun, and must therefore be the sun and the subsiding they will extend the subsiding they will extend bornoutly accounted the sun and the subsidiary and control that it is supported to the sun as the older landward and exposed portions are kilded by being carried above the level of the water. This was the theory established by Darwind and universily accepted for a quarter of a century, the atolis being viewed as monuments erected by the Actinozosi to a vast Pacific continent which had gradually sunk beneath the ocean. While this may take place, a new school has advanced the theory that it is by no means essentially necessary that to construct an atoli, the island which heaving most abundant along the face of the reef, the approvince planted. |
| that the chemical action with the standard roral, thus execution the shallow face of the reef and the explain the fact that on the present face of the rewards the fact that on the present face of the rewards which we have no exidence of its having the power to live, or then put which we have no exidence of its having the power to live, or then put it may be the same of the row and the row which we have no exidence of the sea, whereas a few miles sexuard from these dead reefs, atoils are long formed around the islands of the Indian Occar. |
| |

REEFS. 1800

A .- CORAL RESES.

e for Calcutta. he past twenty om the neces dred, and the e a source of

| 2 | J=5 |
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| Coral Reefs. | CORAL. |
| lime, abundant fuel, and labour at command, there can be little doubt that Calcutta might be supplied with excellent time at a comparatively small cost, and a useful and profitable occupation would be thus afforded for the convicts." | CORAL REEFS |
| "I co | Andamans. 1810 |
| | |
| • | |
| | |
| In the Nicobar Islands upraised coral reefs are found on the coast of | |
| | Nicobar. 1811 |
| . " | |
| ; | Sind. 1812 |
| feet above the base of the Gá group. This bed can be traced for many miles to the south. All the species of coral (five or siv) are encrusting forms or small branching kinds. A Pachysens, or some closely allied form, and two or three species of Hydiophara, are specially common. So again near Nan he writes of coral beds: "The marry shales pass up into high yellow and brown innestone, with a coral rone abounding in | Bombay. |
| | 1813 |
| | |
| fessor P. Martin Duncan and W. Percy Sladen (see Palarontologia of part). But Mr. Fedden conting the Gulf of Cutch from Naoff the coast, is fringed with | Cutch. 1814 |
| much exposed at low spring 'much exposed at low spring 'up to high tide level, The coral has very substitute for stone | |
| that the | |
| Mr Fc that he | Madura. 1815 |
| 67 · | Tinnevelly. 1816 |
| •• | |
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| | |

| 530 | Dictionary of the Economic | | | |
|-----------------------|--|--|--|--|
| CORAL. | Coral Reefs, | | | |
| CORAL REEFS | Chattiram, the thickness of the coral reef exposed above the surface of the water is at least to feet, and probably much more," Further on he remarks: "At the Pamban end of the raised reef it shows a slight northerly dip, and masses of dead coral, apparently in situ, protrude through the sand below high water mark. Reefs of living coral fringe the present coast, but these I was unable to examine, so cannot say whether the corals now growing there are specifically allied to those which | | | |
| | | | | |
| | | | | |
| | | | | |
| Telehinopoly. 1817 | me, rose the land of that remote age, worn and wasted, it may up to the sequence of the myrad centuries that have since rolled over it, but in | | | |
| | ination, I might have | | | |
| | coral descri unalte shand show the board of the bard o | | | |
| | from a modern beach. "But though, to an uncritical eye, the shells of that old sea might seem very like the volutes, olives, cownes, and ark-shells now thrown upon the Madras sands (and perhaps, indeed, they were their remote ancertors), it needed but to look on the great couled amountes scattered her took on the great couled amountes scattered her her levels and there in the broken ground, to know of a surfoxed and protected living the relies of a cretaceous sea. When that undefice our English chalk, over the state of | | | |

Ornamental Corals. CORAL. thousands of feet of white calcareous mud that, long since upheaved and hardened into chalk, greets the homeward bound Indian in the Dover Cliffs, had yet to be slowly extracted through long ages from the sea water by minute organisms long since extinct." ORNAMENTAL CORALS B .- ORNAMENTAL CORALS. 1818 Very little can be learned for certain of the indigenous living ornamental corals. Indeed, it seems probable that in some of the passages - a La Loan made to coral is a congres cores alread of the series indige since, for ornamental purposes, it is only the sclerobasic polypes that form a calcareous substance of sufficient consistence to admit of being cut White Black, 1824 1825 1826 calls "club-shaped Porites" He also says -"I have noticed in the bazars, though I have never gathered it on the coast, a curious species bazars, though I have tever game to the constant of the a tree with white strated stony joints and black horny smaller joints between, which render the whole flexible." It may be here remarked that man of the colorobac a on ale ha a elfernat are part and a colorena of long moss, also occurs, and 'black coral,' of which beads are made, is brought from the Mergui Archipelago" Of Tenasserim Mason further

says — A tree coralivo feet long, of a deep scarlet, is found on the coast, which the residents often call 'red coral,' but it is not the red coral of commerce, those not grow like that, and the red colour is confined to the epidermis, the substance of the coral within being grey."

In concluding this best review of the literature of the Indian ornamental corals, it must be admitted that we are grossly ignorant of the subsect. There are no coal features in lands and we do not know

mental corals, it must be admitted that we are grossly ignorant of the subject. There are no coral fisheries in India, and we do not know whether or not this is due to the absence of corals of commercial value, nor do we possess any knowledge as to the likelihood of the more

1823

CORAL. Trade in Corals. valuable corals succeeding, if introduced into Indian waters No effort has as yet been made to propagate new species or improve the existing Indian corals. TRADE. TRADE IN CORAL. 1820 Some conception may be arrived at of the magnitude of the trade in Coral when it is recollected how many races of people in India regularly wear necklaces of coral. How far the prized ornaments may be derived from Ind ac sees t d coral ne years · his may ent. in 136 and 18 Of some-Prepared. again 1830 Beads. 1831 Imitation. 1832 confession, or a pub-rintial dyall tracts. The bulk of the bought by those classes to be worn as necklaces, the coral beads, when a man is prosperous, alternating with gold beads. Almost all the coral beads were received to the correction of the coral beads. we receive is brought to Calcutta, whence it is distributed over the provinces mentioned, to be sold chiefly at the larger fairs. It is principally Medicine.—In addition to being used for adornment ornamental n serv ancient time and are MEDICINE. ed by being 1833 nd corals are onsumption,

hen calcined

| Corallocarpus | CORAL Wort. |
|---|-------------------|
| CORALLOCARPUS, Welw, Gen Pl, 1, 831. | |
| [16, 1 503; CUCURRITACE Corallocarpus epigœa, Hook f.; Fl. Br. Ind., 11, 628, Wight, | 1834 |
| Syn — Bryonia epigæa, Rottler , B glabra, Rozd ; Archmandra epi- gæa, Arn in Hook , Jour Bot , III , 274 | |
| Ve ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' | |
| 4. | |
| | |
| References — Roub RI Ind. Ed. C. B. C. Jou. Auxelia, Mar Ind. II. 188. Date & Gibs. Bomb BI, 100. Dymoch Mat Mad W Mids. and Ed. 833, Murray, Pl. and Druge, Sund 43 Moodern Sheriff, Supp Phorm Led. 96, O Shaupharsy, Beng Duby, 247, Pharm Led. 95 Walter in Bomb Med Phys Trans, 1848, p 60, Drury, U Pl. 37, Trans, 1848, p 60, Drury, | |
| Habitat A Lock - 1 L | |
| and south Ceylon | |
| Medic | MEDICINE Root. |
| resembles a o to a a a a a a a a g sil pe not that thinke a t | 1835 |
| | Juice. 1836 |
| | - |
| | |
| ou venicia to 19 a sa atis usuany anninstered, he says, "in powder, which is of a very pale colour, in doses of a pagoda (about one drachm) | |
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| | : |
| Dispens, 302) Conf. with Bryonia, B 94. | |
| Coral plant, see Jatropha | |
| Coral tree, see Erythrins. | |
| Coral-wort, see Dentaria bulbifera | |
| C. 1838 | |
| C. 1030 | |

CORCHORUS acutangulus.

JUTE. 1839

The Angular Fruited Corchorus.

CORCHORUS, Linn.; Gen. Pl., I., 235.

The generic name for this group of annual plants is derived from the property of the leaves (κορη the pupil of the eye, and κορη ω to purge or clear).

1840 Corchorus acut

Corchorus acutangulus, Lam.; Fl. Br. Ind., I., 398; Wigh!, [TILIACE E.

Syn.—C Fuscus, Roxb., Fl. Ind , Ed. C.B C , 429, Ic t. 739 Vern.—Titápát, Beng.

References. — Dals and Gibs, Bomb, Fl, 25; Kura, Contrib. Burmets Fl, 130; F von blueller, Sel Extra-Trop. Pl., 88.

woolly
e upper
t paral;
base of
groove.
i patch

wild species in India,

the hotter parts of

India and Ceylon. Roxburgh remarks that it flowers during the rainy and cold seasons, is never cultivated, and differs from C. tridesians, L. in having only one style; and from C. tridesians, L. in having only one two seeds in each cell. Dalzell and Gibson say that in Bombay it is a common weed, and Roxburgh that it is a native of vanous parts of ladiation.

lar for the nly is the allf is the

rilocularis.

| The Round Fruited Corchorus. | CORCHORUS capsularis |
|---|-------------------------------------|
| W 1 C 2 C C C C | JUTE. |
| | |
| the tips spreading somewhat as in C. acutangulus. Duthle's 7,121 he foliage, capsules, and hairs of C. trilocularis with the seeds of C. old rus." | ias to- |
| Fibre,—A coarse fibre is sometimes extracted from this species at Müeller alludes to this plant as an occasional source of jute. | 1841 |
| Corchorus Antichorus, Rœusch ; Fl Br. Ind., I., 398; Wight, I | 73. 73. 1842 |
| Syn —Corchorus humilis, Munro, Antichorus depressus, Linn. Vern.—Bohail, Hind , Bohhills, kurand, bohhalls, bahéphalli, babund Pb , Mudhiri, Sind. References.—Dals. & Giba, Bomb Fl , 25; Murray, Pl. & Drug | ' I |
| Sind, 65. | 3, |
| | FIBRE. 1843 MEDICINE. 1844 |
| by camels. | FODDER. |
| C. capsularis, Linn Fl. Br Ind., I., 297; Wight, Ic., 1 311. Vern — Gh-naiti-staf (according to Roxburgh); Narchá according to U. O. Dutt), Baso. The last mentoned auther in the Glosary to ha blat. Inde. of the Hindus gives the plant the Sankert name Maria. | 1846 |
| | |
| | |
| | |
| | 1847 |
| C. 1847 | , ' |

Dictionary of the Economic

CORCHORUS capsularis.

The Round Fruited Corchorus.

JUTE

References. - Roxb, Fl. Ind., Ed. C.B C, 429; Louretro, Fl. Cochin Ch, VI, 408; Rumph., v. t. 78, f I, Voigt, Hort. Sub. Cal, 127; Brandin.

JUTE

1848

1840

Botanic Diagnosis,—Alone distinguishable from C. ohtorius by the host rounded capsule—a very unimportant character. Gamble's No. 1502 has one capsule nearly round, while the others are distinctly those of olitorius, but some are 4-valved, others 5-valved. Kurz's No. 123 of C. acutangelius has both4- and 5-valved capsules, and Clarke's No. 21,503 has a 3-valved capsule. Olarke's No. 31,637 of C. triloculans, bas at valved capsule, and Hooker and Thomson's sample of that species, from the Panjab, has a 3-valved capsule.

Habitat.—A common plant "throughout the hotter parts of India". This statement, originally made by Roxburgh, is current in the hieratur of jute. While it need not necessarily be implied that a plant is wild (e.g., indigenous) in the area where it is common, still that is the opinion popular writers have derived from the above carefully worded botancial description. The major portion of all we have learned regarding in the opinion of the provide the consolite ton-

favoured the writer with a note to the effect that he found C capsulation of condition of the writer with a note to the effect that he found C condition of the condition of the

If Corruin list of the that x is the color in the color i

tivated "has not should have had cept perhaps one ever, my be an nowing Burnary and nowin

eently seen in the horizontal face of whiteges, &c. It is hepresents the waller, official, or be a specimen of Mr. Talbot

d a a management of ris specimens of rism, specimens of rism, and a cultivated as cultivated the only ered form of the only ered form.

in n prodecemanduced to of Bengia deceman

The Round Fruited Corchorus.

CORCHORUS capsularis.

ets nativity. Edgeworth says of the Banda district, N.-W. Provinces.

JUTE.

1850

that C. capsularis does not occur in Madras. DeCandolle, after enumerating all the countries where the plant is cultivated (vis, the Sunda Islands, Ceylon, India, Southern China, the Philippine Islands, and Southern Asia generally) says: "I am not convinced that the species exists in a truly wild state north of Calcutta, although it may perhaps have spread from cultivation and have sown itself here and there. The writer sper' - portion of that e across

either C. cansul rather indigeno wild or

in some parts of Western India, but grave doubts may be entertained as to either being natives of Bengal,-the province where they are now mainly cultivated, and where they exist frequently enough as weeds around the cultivated jute fields. The suggestion is offered, that, by experimental cultivation, it might be found possible to produce forms of Corchorus from some of the truly wild species which would closely approximate to C. capsularis and C. olitorius. With the imperfect knowledge we possess of this subject, the writer would be much more willing to admit the possibility of some such theory, to account for the cultivated jutes, rather than believe that manifest escapes from recent cultivation are the sole survivals of the wild forms of these plants. The scientific distinction based on the length of the fruit vessel (round in C. capsularis and elongated in C. olitorius) is, to say the least, scarcely worthy of as much consideration as the peculiarities recognised by the cultivators in distin-

ivated forms that yield the distinction in the shape

to give origin to certain species of blassica, an or winch can be produced from the seeds of any one by careful cultivation

It is noteworthy that definite Sanskrit names should not exist for these most useful plants, while other plants of far less value have assigned to them names so precise as to distinguish their varieties, to separate their wild from their cultivated forms, and to indicate every possible structural peculiarity There are neither Arabic nor Persian names for the

1851

CORCHORUS capsularis.

The Round Fruited Corchorus

JUTE.

urged that when Roxburgh was told that the plant grown in the Botane Garden was jute, there were in all probability no such dealings in the fibre between Calcutta and Eastern Bengal Besides, Mr Kerr rejects this derivation of the word, on the ground that jute is in no way a waste, rejected, by-product or remnant, as would be implied by the word with that A the same time Mr. Sen's idea would simply be that it was in

1852

Roxburgh were most probably, as at the present day natives of Urissa, and that, therefore, the name jute given by Roxburgh, the first European writer who used that name, was in all probability a soltened form of just, a word which may be admitted to have come from the Sanskri thate, unless we presums Mr. Sen's derivation of the word to have prevailed all over Orissa prior to Dr. Roxburgh's discovery of the plant.

The Sanskrit word Nedika is said by Dutt to have been given to distinguish and kelazaka to O capsularis, but while Dr. Dutt's work is devoted to the Matena Medica of the Hindus and is compiled from Sanskrit medical works, he only gives the above names in a Glossary at the and, and does not attribute to the plants, to which he says they refer, and, and does not attribute to the plants, to which he says they refer, but properties as known to the Sanskrit writers, while the modern Hindus we he leaves of jute and the species of Corchorus generally, both as food and medicine Dr Moodeen Sheriff, a high authority on vernaular control of Scale 1. Anchor Descan mans to the species

1853

In use in the interest of the

1854

2854

2854

2854

a later introduction than Crotalaria juncea to which patts is compared. This idea receives further support from the fact that while sans occurs in the most ancient Sanskrit works, patta appears in the comparatively recent. In one of the references to patta, it is spoken of as the chim (probably a misspelling for China) patt, a fact which would point to the cultivated jute plant having come to India from China. Mr. Hem

JUTE.

CORCHORUS The Tufted Corchorus fascicularis.

Chunder Kerr rev to fibre or to rope cations does there

nearly allied to flax

several works pat form of hemp but which by the home authors was pronounced to be more By the beginning of the present century the word

đ ŧ

the cultivation of the plant has been introduced from some other country and most probably subsequent to the date of even the most recent Sans krit works. If a modern development we can scarcely admit that the stock from which it was derived could have disappeared while numerous wild plants closely allied to Corchorus capsularis and C plitorius are

fibres only inferior The seat of the

district through ng lands of the itorius on the other hand, occurs tern side of the Hooghly river, and in Western and Southern

Although there are numerous references to Patta Juta &c. in early Ind an writings enough has been said to show that the greatest caution

British rule and in a fourth it is put down at 400 years ago. In all districts it is spoken of, however, as a crop regarding which some period could be fixed, while no such language is used with regard to rice, cotton, sunn hemp, or any other crop of an importance at all comparable with Jule (Conf with C obtonus in a further page)

Fibre -See a further page, and also Jute Medicine -The leaves dried are used medicinally being eaten at breakfast t me with rice in cases of dysentery The cold infusion is also administered as a tonic in dysenteric complaints, fever, and dyspepsia Oil - The seed when fried over the fire yields an ol thiefly used for

lighting purposes' (Ramshunker Sen Agri Gaz, 163) Corchorus fascicularis, Lam , Fl Br Ind , I 398

Vern -Hirankhori, bhaughali, Bomb , Jangli or ban gát, bil nalita Beng P --- k

FIBRE.

1855 MEDICINE

baphulli is also given to C. Antichorus

References - Rorb Fl Ind , Ed C B C , 429 Dymock, Mat Med W Ind , 2nd Ld 115

Botanic Diagnosis - Capsules small (1-1 inch) almost cylindrical, very ha ry beak 3 4 splitting with the dehiscence of the capsule Seeds trian gular or diamond shaped, more pointed at the lower end and very similar to those of C olitorius but smaller

speak so used le nalst deto by ins, the ng, and narchá itorius

tgunny Inever with that roduced n hemp

CORCHORUS

lew's Mallow olitorius. Habitat -A common wild plant throughout the hotter parts of India from the Panjab to Bengal, and westward to Bombay (common, for example, at Surat). Distributed to Ceylon FIBRE. Fibre - The fibre extracted from this plant is employed in Sind in the 1850 manufacture of ropes. MEDICINE. Medicine -Sakharam Arjun mentions the fact that the whole of this T860 watery extract mixed It is also given in av the "whole plant omewhat astringent and is valued as a restorative" The name hirankhori given to it, means deer's hoof Corchorus olitorius, Linn; Fl Br Ind, 1, 397 1861 TEWS MALLOW Veru -Pat, koshta (bhungi pat, according to Drury, and bhungi, in ji pat, bhungi or ban ascha, koshtu (according eddy, TAM Parinta in N-W P (Atkinrding to Dutt), patta (according to HOXU ,, and Sing give (according to Ainslie), SANS Sir Walter Elliot alludes to this species but makes no mention of C capsularis, and neither assigns Jutá nor Patta to Jute Arnslie was perhaps the first European writer who assigned to this 1862 plant the Hind name singgin-panascha, and while this has been reproduced by several subsequent authors the word does not appear to be in use in had at the present day, at least not in Hindstan proper. The Canskirt names given above have already been commented on under C. capsularis Mr Hem Chunder Kerr points out that the word bhung! (given by various authors -seent day It is . alls in a A - 1 - Mat Ind , II , References -- " Rozi & Gibs , Bon 333, Athinsc Moodeen Sheriff, Supp Phorm heriff, Supp Pharm Ina, 114, Murray Benson Saidapet Exper Farm Man, 63, DeCandolle, Sind 64, Benson Origin Cult Pl, 132 Botanic Diagnosis -Glabrous except the upper half of the petiole, and the primary veins on the under surface, where woolly hairs occur, nervules transverse, nearly parallel, pellucid, and anastomosing Capsule very long and glabrous, beak straight, remains of the flower forming Seeds somewhat triangular, pointed at both extremities, but much more so to the hilum, surface often roughened, so as to appear as if minufely hairy

C, 1862

or Edible Corchorus

CORCHORUS olitorius

HITE

Bombay, and Talbot (a botanical observer whose opinion must carry considerable weight) remarks "Abundantly wild about Yellapur" Dr Gibson has left a specimen of this species in the Calcutta Herbarium

1863

brous the capsules are harry along the angles and have a few of the peculiar tuited hairs of C trilocularis, as well as the long narrow capsules of that species It has also the thick and somewhat linear, coarsely serrated, leaves peculiar to that plant, but the leaves are not only harry but have a few of the tufted glandular hairs on the under surface as well as on the fruit Kurz gives the habitat of C olitorius, as far as Burma is concerned, as "Aya, Pegu, cultivated and mild in rubbishy places and agrarian lands 'Atkinson says that it is found in "Dehra Dun,' but in this connection it nay be added that in the Saharunpur Herbarium while there are specimens of the allied species, C acutangulus, from various localities in the North Western Provinces and the Panjab, there are none of C olitorus One specimen of C acutangulus is marked as collected at Dehra Dun, and it is probable this may be the C olitorius alluded to by Atkinson, Stewart. and other writers on the Flora of Northern India In the report (to which reference has been made under C capsularis) on jute cultivation in Madras, it is stated that a considerable amount of C. olitorius is grown in Ganjam, Godavery, Kistna, and Nellore but not for its fibre lectors of Ganjam and Godavery say it is wild in their districts. The only district in the southern parts of the Madras Presidency where the plant was discovered was Salem, the Collector having found a specimen on the margin of a field, which Dr Bide identified as C olitorius A sample of C. trilocularis is, however, in the Saharunpur Herbarium named C. olitorius, and this was apparently collected by Mr J S Gamble in the Kistna District, it bears the number 12662 The merest possibility of such a mistake existing regarding the Kistna samples reported on above may be admitted as sufficient to throw a doubt on the and genous character of C olitorius in even the northern districts of Madras ~ce is

1864

the plant that yielded the so-called jute of their former communication was a species of Citaliana and not of Corcherus Roxburgh points out in the From Indica that there is a wild form of the plant known in Bengal as th

C. 1864

grı jute year

CORCHORUS olitorius.

lew's Mailow Lan. --11 4L

JUTE.

O Shaughnessy, both of reddish C capsularia the present day, applied s and the meser, at ict species

> or ed ly

from either of the above re found wild in the Panjab, but in cours not give its ranjabi maines, while he says it is the ban-pat of Bengal, a circumstance that would seem to justify the inference that Stewart's wild C. olitorius should be corrected into C fascicularis, the more so since that species is undoubtedly wild in the Panjab, although not alluded to by Stewart (For another error committed by Stewart see the remarks under C. acutangulus) At the same time the writer, on looking over the Saharunpur Herbarium collections found one specimen, apparently correctly named C olitorius, which was discovered by Dr Aitchison (No 476), and on which the note occurs, "occasional from Thul to Kuram" The Saharanpur Herbarum, as already remarked, does not, however, possess a sample of Corchorus olitorius as found in the Paniab proper.

1865

If, after carefully considering these somewhat conflicting opinions, we still believe that C. olitorius is indigenous to India; if, indeed, we accept

being viewed as indigenous rests at present on doubtful evidence, but it may at least be confidently asserted that it is not wild in the districts where it is now or ever has been known to be cultivated for its fibre Indeed there a - ---- b b

The latter would appear to have been cut Olitorius than for capsularis tivated in China be to the people of Indi

hood of Canton for

Mr Hem

THE .TO this name to the Sauskin au-ma signifying haxen call C. capsularis, Rami tsjima or Chinese hemp But in the same way C. olitorius has been known to the Egyptians and Syrians for a very long time, their acquaintance with it being possibly prior to the date of the evidence of a positive character, that a knowledge of the properties of the plant was possessed by the inhabitants of India Greek hopyopor was applied to a pot-herb, but in all probabilits the

1866

plant alluded to was not the Corchorus of the present day Accepting the derivation of the Greek word as implying a drug useful in the treatment of eye diseases, it may be pointed out that no such property is clumed for the species of Corchorus. It is perhaps only a fancial idea, but this property of a collyrium associated with namino and poloxira nd

| Products of India. | 543 |
|--|-------------------------------------|
| | ORCHORUS |
| Mallora. It began apparently to be cultivated in Egypt about the beginning of the Christian era. It is there known by an Arabic name melobych, a word which seems in Crete to pass into maulchia (Conf DeCandolle). It will at once be seen that these Arabic names (if indeed they be Arabic) bear no relation to the vernacular synonyms given the Hindus) to any form Muhammadans not having uring their successive inva- | JUTE. |
| ousand years from the 7th | 1867 |
| | |
| And ratified shares at the same transmit such the order of the order | ļ |
| Crossing a sees_the consequence of the decree of a seed on the decree of a seed on the decree of a seed on the decree of the pute plant are natives of Bengal, because they are plentiful weeds in cultivated situations. (Conf. with C. capsa- | |
| laris) | FIBRE. 1868 MEDICINE. 1869 |
| | |
| are emolhent and used in infusion as refrigerant in fevers and special diseases. The dried plant toasted and powdered is used in visceral obstructions? Dr. K. L. D6, O1E., says: "The dried leaves of this plant are sold in the market. A cold infusion is used as a butter tonic, and is devoid of any simplatung property. Mr. Simon of Assam informs me that it | 1870 |
| | |

C. 1871

F00D. 1871

CORCHORUS

trilocularis

| trilocular | is |
|-----------------------|--|
| JUTE. | peculiar form which may prove an undescribed species, it is known to them as a useful pot herb under the name of bir-namela (Rev A Camphell), a name most probably derived from the Bengali marcha (C. capularia), hence of some importance historically, since it would indicate that the knowledge of the plant was derived anciently possessed by this primitive a his Economic Products gives (Part V) |
| DOMESTIC 1872 | of baskets, &c |
| 1873 | Corchorus tridens, Linn , Fl Br. Ind , I , 398 Prince Pri |
| FIBRE 1874 1875 | distributed": "Generally Fibre —Murray specially mentions this species as affording a cordage fibre in Sind C. trilocularis, Linn; Fl Br Ind, I, 397. |
| 75 | Vern — Kuru chunts, BONB, the seeds are in the bazars sold under the name of Rayajira, haunts, Sans, Tandassir, Kan (according to Lisbod), the seeds are known as Isbund in Sind (according to Murray) Reference.—Dymock, Mat Med W Ind., 2nd Ed., 115 |
| | Botame Diagnosis -Stems, petioles, and under-surfaces of the leaves |

1876

ich is often square on section, obliquely and sharply truncate at both extremities, hlum large with a raphe-like cord thrown from it to the top of the seed crossing one of the angles. The writer would be disposed to unite C. tridecar and the same with these, into a section characterised by the seeds, he species C. urticacfolius. He can put no reliance on the presence of absence of a short style or of a spreading stigma, as he has found both these conditions on the same plant. The fruits of the species of Corchorus are

te glabrous fruit short

more variable than any other part of these plants.

Habitat—The Flora of British India striets that this species is met with in the N-W Provinces, the Panjab, Sind, and south to the Nighr hills Roxburgh, however, says that it is a native of Bengal, and florard, Sholf-about the end of the rains, and Lieboa that it is found in Gujard; Sholf-about the end of the rains, and Lieboa that it is found in Gujard; Sholf-about the cond of the rains, and Lieboa that it is found in Gujard; Sholf-about the cond of the rains, and Lieboa that it is found in Gujard; Sholf-about the conditions of th

FIBRE 1877 MEDICINE, 1878

laris rand othe

Greeks. Theophrastus says ἐπαροιμιαζόμενο, διά την πικροτιτα κόρτορος (Η. P., 77) Pliny (21, 32, and 25, 13) also mentions it as a poor kind of pulce growing wild "Murray states that "the plant macretated in water for a few hours yields a mucilage which is prescribed as a

The Commercial Fibre

CORCHORUS.

demulcent, and the seeds as a specific in their matism "

(Pl and Drugs. Sind. 65) u, os i The Illes Ilderveh, by Noured-din Mahomed Abdulla Sherazi, uses the name of sebund for a species of what appears to be mustard seed.

THEF

In connection with the reports of the Calcutta International Exhibition the writer published the greater portion of the facts which will be found in the present account of the fibre obtained from the species of Corchorus In a further volume the commercial aspects of juje will be given (see JUTE), while in the following pages an effort is made to present a general and historic sketch of the subject together with certain facts of economic interest connected with the species of Corchorus. It may here be stated that the HITE 1870

a trade in Malachra capitata. The reader is, therefore, referred to the ac-

Comm. and Vern. Names, - Jute, or Jew's Mallow, Eng : Jute, mauve des juifs, corde textile, TR; Jule, GERM, Pat, BENG. Roxburgh says that "the Bengalis call it jute," but Royle enters into an explanation of

References .- Hem Chunder Report on Juie and other Fibres in ...

Lorchorus

HISTORY OF THE JUTE INDUSTRY.

The history of the modern Jute industry is exceedingly interesting and intimately associated with the British rule in India. There can be no doubt that jute was known to the people of India from compa-

C. 188a

HISTORY. 1880

CORCHORUS.

The Jute Fibre

constants and C

xe up

HISTORY.

sinni, patto, and bhang, were synonymous and generic terms for bore and coarse cloth, without much regard to the plant from which the fibre was obtained If so, about the beginning of the present century, the word for became fixed and associated with the fibre of Corchous olitons and C. capsularis. Prior to that date the Government returns of exports from India mention hemp fibre; this must have been either and or jute, since the true hemp fibre has not been cultivated for centures a least and modern.

1881

largely clad in jute cloth of home manufacture, such as, at the present day, is used by the aboriginal tribes. The increased facilities for the important of the property of the control o

Bags were required for this tragreedily bought up. The hig

tive to increased activity, and a recognised part of the Bengal peasant's work. By and by nonetely a recognised part of the Bengal peasant's work. By and by nonetely a recognised part of the Bengal peasant's work, and in due time it gained the day. Just was exported to Europe for cordage, and ultimately for the manufacture of the bags required in the grain tride. The first commercial mention of the word "just" is in the customs returns of the exports for 1828, when 364 cwit, were sent to Europe. So and the agriculturist found that his time would be more profitibly spent in preparing an extra quar compete with steam and r

speedily outstripped the

coffee plantations in Ceylon, Council of that Island: these Company, Limited," and are

rapidly in every direction around Calcutta. In the Trade Returns for C. 1881

of European Commerce

CORCHORUS

was 6,441,863 gunny bags brought into competition steadily, and in 1879 80, exported from India The

relative importance of the export trade in raw jute, as compared with the exports in manufactured jute of all kinds, may be seen by a careful

This is of course a comparison between the total exports of raw jute and a portion of the Indian manufactures. In a further page the relative amount of Indian manufactured jute exported as such and the amount used up locally or devoted to the export trade in grain will be found. But

which the jute manufactures have passed out of the hands of the Indian peasants, who alone, hitle more than 40 years ago, met the demand for gunny bags. This is seen very clearly when the above figures are compared with the exports of 1850-51. At that time the value of the gunnes exported was greater than that of the raw jute,—the former being 215,578, the latter, f(197,071. There were no European factories in Indian 1850, so into the market was supplied by the Indian peasant's hand loom. Steadily the exports increased, the demand for gunnies calling into existence the Dundee mills, and soon after the Indian factories are considered to the supplied of the property of the proper

1882

Dundee and other foreign manufactures.

CULTIVATION AND PREPARATION OF THE FIBRE.

CULTIVA-TION. Area. 1883

ed ten Go hae 20

that more than half the annual yield of fibre is exported to foreign countries and mainly to Great Britain and the United States of America, the

CORCHORUS

The Inte Fibre

CULTIVA-

Tipperah 117,000, Furreedpore 85,000, Rajshahye 45,000, 24 Parganas 44 000, Dinagepore 40,000, Bogra 34 000, Nuddea 30,000, Jessore 30,000, Khoolna 30,000, Purneah 24 000, Hooghly 10 000, Goalpara 15 000

In other provinces, jute, though occasionally cultivated, is rarely so on

to Government on certain samples of jule produced in "laulas pur

Impossible in Madras 1884

Madras Manual (Vol I, 361), it is stated that a portion of the jute used by Messrs Arbuthnot & Co is produced locally, "but it is hoped that before long the supply will be drawn entirely from the district." Recent experiments have, however, been made in order to discover whether the true jute plant could be profitably grown in Southern India Mr Benson (in his Saidapet Experimental Farm Manual and Guide, page 63) gives the result, arriving at the conclusion that, unless some parts of the Northern Division be more suitable, jute cannot be grown in Madras So in a like manner it has been tried in Bombay and Burma, with apparently the final verdict that, in these provinces, it cannot be produced at a price to compete with Bengal The plant can be grown most successfully in Parish that the produced the produced at the plant can be grown most successfully in Parish that the plant can be grown most successfully in Parish that the plant can be grown most successfully in Parish that the plant can be grown most successfully in Parish that the plant can be grown most successfully in Parish that the plant can be grown most successfully in Parish that the plant can be grown most successfully in Parish that the plant can be grown most successfully in Parish that the plant can be grown most successfully in Parish that the produced most successful most successf successfully in Burma, but the cost of labour has proved fatal to any idea of an extensive commercial industry. In 1872-73 Mr Hem Chunder Kerr estimated that there were one million acres under jute in Bengal and Assam distributed over 37 million acres of country, and that should the

Actual area 1885

-most calle is an

per acre. e in 1884 maunds sumption 8 maunds € Upon o to 1831 10 15%

ed en

ts of jute into Calcutta were carefully recorded and the above figures 1 ay therefore be accepted as indicating the expansion of the area under jute in As confirmatory of this general conclusion, based on the pub

An effort has been made to correct returns in maints into cmt as being more likely to be understood by European readers, but where this has not been done, the result may be arrived at by the following simple rule maints x + = cmt.

lished figures of imports into Calcutta and Chittagong, it may be here

CORCHORUS

CULTIVA-

added that Mr. Finucane (Director of Land Records and Agriculture in Varaingunge He jute of 400th each Wilson adds the mills in Bengal, but the c tion of Mr Fie on the 1886 tration afford c It is desirable to draw sponsible for the italics in the above quotation attention to the fact that the record of the jute trade preserved by merchants bears a close approximation to that tabulated by Government from the very extensive and complicated returns of road, river, and railway traffic, the concentration in the ultimate centre thus being seen to preserve a distinct relation to the far-reaching ramifications of the stream of supply But Mr Finucane concludes his review of Mr Wilson's figures as follows -" If the annual average of the eight years ending 1884-85 be taken into consideration, the difference between the two sets of figures is not considerable, the estimate worked out in this office from the data above described being only 3 97 per cent less than that of Mr Wilson ' Soil - Jute seems to be capable of cultivation on almost any kind of 1887 Climate 1888 are contivator are not regard as worth cutting down Preparation of Soil -It may be stated that, when the crop is to be Preparatio raised on low lands, where there is danger of early flooding, ploughing commences earlier than upon the higher lands. The more clay in the 1880 soil, the more frequently it is ploughed before sowing The preparation thus commences in November or December, or not till February or March, the soil is generally ploughed from four to six times, the clods

are broken and pulverised, and at the final ploughing the weeds are

do the cultivators buy and sell their seeds. In the corner of the field a

few plants are left to ripen into seed, and these are, next year, som broadcast. The sowings, according to the position and nature of the soil, commence about the middle of March and extend to the end of June. Harvest—The time for reaping the crop depends entirely upon the

date of sowing; the season commences, with the earliest crop, about the

end of June, and extends to the beginning of October.

Seed -No special attention is paid to the selection of good seeds, nor

collected, dried, and burned

C. 1891

Seed

1800

Harvest.

18g1

CORCHORUS The fute Fibre CULTIVA-The crop is considered to be in season whenever the flowers appear, and past season, with the fruits. The fibre from plants that have not flowered is weaker than from those in fruit, the latter is coarser and wanting in gloss, though stronger It is late reaping that is chiefly accountable for the coarse fibre found in the market. Crop Crop -The average crop of fibre per acre is a little over 15 maunds. 1802 but the yield varies considerably, being as high as 30 to 36 in some and the also very dependent idapet farm, the ground, verage yield 1 1 40 430 Retting 1803 two or three days, to give time for the decay of the leaves, to discolour the fibre in the retting process, in others the bundles are carried off and at once thrown into the water. There is some ground for thinking that, if the drying of the leaves by stacking does not prevent the discoloration of the fibre, the fibre itself is likely to be benefited by the process, since it is found to separate more readily from the stems, and is thereby saved from the danger of rotting from over maceration In some districts the bundles of jute stems are submerged in rivers, but the comcome to be in favour of tanks or road-side stagnant pools ure of the water, the kind of It varies from two to twentyisit the tank daily, and ascerias begun to separate from the This period must not be exceeded, otherwise the fibre becomes stem rotten and almost useless for commercial purposes. The bundles are - an the ton of them sods and mud s rapidly completed vater, proceeds "to lext the roots, and, t sie management brought s to wash his head, it through throu, he d) remain 1 water as dry in the ttle doubt Extraction by la simple Machinery he dry jute 1801 scured even by the poorer culindustries might spring into machinery will, for some time and that the princ pal mineral of

atent process
ion which is
he bark from

the stem, and the fresher the stem, the more easily is the bark separated.

C. 1804

of Burnosan Commerce

CORCHORUS.

Mr W Cogswell, however, who is an undoubted authority on all questions connected with jute, expressed in December 1881 his opinion that a softer fibre was obtained by the old process (vide A H Society's Proceedings, December 1881).

PROPERTIES OF TUTE FIBRE.

PROPERTIES OF JUTE 1805

Chemical and Microscopic -" The fibre, as found in commerce, consists of the fibre bundles separated from the cortical narenchyma. The bundles contain 6 to 20 fibres. The fibres are firmly coherent in the bundle, the cohesion taking the form of fusion of contiguous walls, the line of fusion being very apparent. The ultimate fibres are of the normal fusiform type, 15-3 mm in length In section they are seen to be thick walled and polygonal Reactions, characteristic of the inte-allied group of fibres, are brown with jodine, deep vellow with an line sulphate, purple with phloroglucol and hydrocloric acid, a strong affinity for the basic colouring matters Mercerised fibre-Microscopic features Concentrated solutions of the alkalies have a remarkable action on fibres of this They resolve the bundles more or less completely, and cause the fibre wall to swell so as to almost obliterate the cavity. The filaments, in addition to being made finer, are much softened in texture, and develop a wavy outline, giving the fibre very much the appearance of wool' (Cross. Beavan, King, and Watt Report on Indian Fibres, 6 26) chemical analysis, as given in the report just quoted, may be here briefly reviewed Jute, in point of percentage of cellulose (perhaps the best criterion for judging of the value of a fibre), is about equal with Urena Criterion for Judging of the value of a note, is about equal with observing 7, 7, Calotropis 765, Abntilon 750 and Agare 758, and follows after Abroma 800, Rhea 803 Flax 819, Sida 831, Crotalaria 830, Marsdenia 883 and Girardinia (Nilgiri nettle) 896 Jute possesses 760 per cent, and is thus in point of cellulose about the eighth most valuable fibre in India It is noteworthy that of the fibres enumerated—Abuti-ion, Urena, Abroma, Sida, and Jute are obtained from closely allied plants and yield very similar fibres. But of these lute is the next to the last in point of chemical merit, Sida being the first of the series is a fact of the greatest importance, when it is added that the experts who examined these fibres at the Colonial and Indian Exhibition pronounced

Mercerised. 1806

Cellulos.

Ash.

the cell carty completely, thus causing the filaments to become much finer and soliter in texture By intration just gains in weight, becoming 128, being in this respect inferior to any of its allied fibres, but it is found to contain 4,7 per cent of carbon having the highest amount of any recorded Indian fibre, Sida, for example, possesses 45°2, flax 43°0, and Bauhnan fibre only 40°7

CORCHORUS

The Jute Fibre

PROPERTIES OF JUTE.

The results of the chemical and microscopic investigation of jute, instituted by Messrs Gross, Beavan, and King, may be briefly stated to

Strength 1899 woo!

Strength and Industrial Properties.—Royle remarks "Jute is certainly characterised by fineness, silkiness, and facility of spinning, but it is less strong than many other Indian fibres, which are possessed of similar

to the cultivator's necessities and the manufacturer's wants
The question is not, therefore, one as to whether jute or Sida is more easily cultivated and gives the better result in point of yield of fibre, but whether the infinisc

superiority of Sida fibre would justify its experimental and systematic cultivation until a stock was produced that could be grown as readily and

1000

admit of as rapid decortication as in the case with just. The plant is wild to-day, and it is unfair to compare the yield of fibre from such a plant with results obtained from just. After careful cultivation for its of years it would be fair to compare the ease of cultivation and yield of fibre in Sida with that of just and during this experimental stage reminerative returns might easily be obtained since there can scarcely be two opinions as to the superiority of Sida over just for the finer test opinions as to the superiority of Sida over just for the finer test opinions as to the superiority of Sida over just for the finer test of India that a "dry line" of Corthorus capsulars broke well weight of the superiority of the fibre of capsulars in the superiority of the fibre of capsulars in weight. This fact of the superiority of the fibre of capsulars over olitorius is well known in modern commerce. To compare with these results it may be mentioned that, under the same test, a "dry" and a "wet" line of sunn-'temp broke with food and 2008, respectively, in

latter gair

water for

Corchotus give way

observed in the tanned ropes, but the tarred seemed to present to strength considerably, the line fresh and tarred broke with 61h, and after

maceration for 116 days bore a weight of 60h

The defect of jute is the difficulty to spin the higher counts 20 being about the finest made, commercially, and when manufactured the fabric lasts well, so long as it is not submitted to a damp influence, but rots rapidly when damp and exposed to the atmosphere.

of European Commerce

CORCHORUS



PRICE OF CULTIVATION

No trust vorthy figures are any lable of the pr me cost to the cult of the cost of ras sing and extract ng a mund of juic fibre. But the following figures high have been kindly furnished by a mercant le firm lead to the rase paid to the growers. Unterlanded in Calcutta cost as follows per maund in the four years of the figures.

| maund in | the four years c | d ng 1883 | | | | |
|------------|---------------------------|----------------------------------|-----------------------------------|------------------------------------|-----------------------------------|--|
| Qual es | | 1879-80 | t88a 8 | 188 -8 | 882-83 | |
| Nara noanj | F ne Med um Common | 8 a p 5 2 9 4 9 6 4 9 9 | R a P 5 0 3 4 6 9 3 13 7 | R a p 4 15 0 4 3 4 3 10 4 | R a p 3 7 6 2 15 2 2 7 6 | |
| Serajeanj | (F ne Med um Common | 5 4 0 4 1 0 4 2 0 | 5 2 0 4 8 0 3 15 0 | 5 1 0 4 4 0 3 12 0 | 3 9 0 3 1 0 2 9 0 | |

The average pr ces for the last four years were as follo vs -

The charges per maund neutred from the time the jute is purchased from the producer to the time it is landed in Calcutta are approximately as follows:

Serajganj Nara nganj F e . ht to Calcutta 8 0 8 ô n Dumming shipping &c 0 2 2 o A atda o 2 2 Bepa spoft o 5 o 0.5 0 TOTAL

Deduct og the clarges just shown from the cost of the jute landed of Calcutta will give the rates paid to the grower thus —

| Qual t es | 1879-80 | 18So-S | 188 -82 | 188 -83 |
|--|---------|--------|---------|---------|
| Nara ngan; {F no Med um Common {F ne Med um Common {F ne Med um Common { | # a p | R a p | R a p | R a p |
| | 4 1 9 | 3 !5 3 | 3 14 10 | 2 6 6 |
| | 3 8 6 | 3 5 9 | 3 2 4 | 1 14 2 |
| | 2 15 9 | 2 !2 9 | 2 9 4 | 1 6 6 |
| | 4 3 0 | 4 ! 0 | 4 0 0 | 8 0 |
| | 3 0 0 | 3 7 0 | 3 3 0 | 2 0 0 |
| | 3 1 0 | 2 !4 0 | 2 1 0 | 1 8 0 |

The pr me cost to the cult vators must be something lo er than the figures sho n in this last statement, and assuming that the data fur

554

CORCHORUS.

The Jute Fibre



nished are near the truth, if not correct, they lead to the following important inferences, vis. (a) that the pduring the past few years, and (b) t men have not varied, those of the

men have not varied, those of the with the fall of prices in Calcutta. siderably; a good year induces an i

siderably; a good year induces an indiscriminate extension of the area which must of course be attended the following year by a fall in price,

from all sources was practically the same as in the previous year; while the value of the exports from Chittagong was twenty-seven lakks more

1003

May, when the young plants were seriously damaged by floods who accompanied the cyclone, especially in the districts of Rungpore, Rajshahye, Dinagepore, Bogra, Julpigoree, and parts of Hooghly. These localities, however, excepting Rungpore, are not of first-rate importance

said that ar; and, normal, s will be ted that id on the lugust." which ince of

| | | | | | | | | | Average whole- sale price in 12 selected districts in Bengal. | |
|---------|-----|---|---|-----|-----|-----|-----|------|--|--------|
| 1876-77 | | | | | | | | | R a. f. | R 4 |
| 1877-78 | | | | | | | | | 300 | 1 16 |
| 1878-79 | | | | | _ | - 7 | | | 1 4 0 0 | 4 10 |
| 1879-80 | | | | | - : | • | | - : | 4 10 6 | 4 13 |
| 1830-81 | | | - | - 7 | - 1 | • | | | 480 | 4 14 |
| 1881 82 | | | | • | • | • | - : | • | 7 8 0 | 4 14 5 |
| 1882-83 | - : | • | | | • | • | | - 11 | 7 8 0 | 4 5 |
| 1883-84 | - | | • | • | • | • | • | ٠, | 2 12 0 | 4 12 0 |
| 1884-85 | | | • | • | • | • | • | • | 3 7 6 | 4 1 0 |

of European Commerce

CORCHORUS

COMMERCIAL VARIETIES

There are several well known commercial varieties of jute fibre, of

COMMERCIAL VARIETIES. 1004

order those of importance being marked *

I Bakrabadi -A beautiful soft fibre, one of the finest qualities from the

2

r rope

3.

chiefly Le near

Fandpur where there was formerly a large mart for this variety of jute. The name is given to all the jute from Backerganj and Far dpur

4. * Desi (in commerce Daissee) — This is a useful and good fibre, largely used for gunnes, it is long, soft, and fine but it has a bad colour and is pronounced 'fuzzy'. It is produced in the

5 *

ganj and is said to consist of two kinds or sub varieties
(a) Bilan Deswal, or fibre from the crop grown over bhils or

marshes

(b) Charna Deswal, or fibre from the crop grown on churs
 Inagiput -A poor fibre short weak, and more suited for paper

manufacture than for spinning It comes from the Pubna district

7 Karingani —A fairly good fibre very long and of good colour It comes from the Mymensingh district, taking its name from a

8

5

77

These it qualities and others of minor importance, are in commerce generally grouped under four leading classes represented by the Serajagans, Narangans, Den, and Deva, and these, again, are classed as "Fine," "Medium" and "Common," according to the qualities of the fibres Mr James Duffus, in a letter-addressed to the writer, 351 of this

1905

ORCHORUS.

The Inte Fibre

COMMERCIAL VARIETIES.

subject. "Every small mart in Eastern Bengal has a jute of its own, quite as worthy of mention as many of the minor forms alluded to above." This remark has an interest beyond that of commerce, for we must either

FOREIGN 1006

TRADE

1007

FOREIGN TRADE IN JUTE AND JUTE MANUFACTURES.

The dustr

tion of the plant, and of the Indian manufactures.

INTERNAL AND COASTING TRADE INTERNAL

a russed under the me Consumption

to indicate very various existing In a special Report on this subject Colonel L. modes of conveyance

oo an rear but he refers by him he and Chitta-, the latter the foreign

e of British India for that year the foreign exports were put down at 8,369,686 cwt and the coasting trade at 1,267,034 cwt, making a total of jute ship-ments from Indian ports of 9635,720 cwt Colonel Conway-Gordon gives the total imports into Calcutta as 9,392,813 cut, of which 3 579 062 cut were conveyed by native boats, 1,969 237 cwt by steamers, 3 482 522 cut by the Eastern Bengal Railway, 148 cwt by the South Eastern State Railway, 356 496 cwt by road, and 5,348 cut by sea Thus the Country Boars head the list, carrying to the sea-board 38 1

1908

to the mills it would be seen that jute is of importance to a full in number of persons than to the 50,000 who find daily employment in the

for the purpose of allowing of comparison with the returns of foreign trade, Colonel Conway-Gordon's figures of maunds have been converted into cut

of European Commerce

CORCHORUS.

European factories But even this estimate would leave out of all consideration the indigenous hand looms that are still able to compete with steam in the production of jute cloth, bags, and cordage

HOME MARKET

RAW IUTE

EXPORTATION AND HOME CONSUMPTION

EXPORTS.

The following abstract of the FXFORTS OF RAW JUTE FROM CAL-CUTTA will be found interesting, as showing the steady and constant increase and development of the jute trade The mean exportations for

| $\mathbf{U}_{\mathbf{P}}$ to | | | | | | | Average of five years in cwt |
|------------------------------|---|---|---|---|---|---|---------------------------------|
| 1832 33 | • | | | | | | 11 800 |
| 1837 38 | | | | | | | 67 483 |
| 184 43 | | | • | | | | 117 047 |
| 1847 48 | | | | | | | 234 055 |
| 1852 53 | | | | | | | 439 850 |
| 1857 58 | | | | | • | | 710 826 |
| 186 63 | | | | | | - | 969 724 |
| 1867-68 | | | | | | | 2 628 10 |
| 187 73 | | | | | | | 4 858 162 |
| 1877 78 | | | | | | | 5 362 267 |
| 1882-83 | • | • | | • | | | 7 274 000 |

The fore gn exports of raw jute were, in 1882 83 10 348 909 cwt

1910

senting an increase in value from R620 to R5 84 69 259 in the short period of 55 years (eg, from £62 to £5 846 925 for exported raw jute alone) speaks volumes for the noble fleet of merchant vessels trad ng with our Ind an ports Mr Hem Chunder Kerr, in his valuable Report on

the held of European commerce

The figures of Indian trade show that the exportation of jute steadily increased from 1 092 663 cut in 1860-61, to 37-4-083 cut in 1870-71, that in 1871 72 it suddenly rose to 6 133 813 cut, and during the past 5 years has preserved an average of about 7 274 000 cut

In 182 83 Ind an commercial men calculated that on an average Scotland consumed over 184 on bales (750 on cut 1) a week Of three Messrs Cox Brothers take 2200, Messrs Glroy & Sons 700, Messrs Macloim, Oglve & Co, 650, Mr John Sharp 700 In England the weekly consumption is over 1860 bales, the largest consumers being the Barrow Company, 600 In Ireland the total weekly

1911

CORCHORUS.

The Inte Fibre

| RTS |
|-----|
| |

consumption is about 730 bales, the largest firm consuming under 300 bales a week. Thus Great Britain requires over 21,000 bales or 81,000 cwt a week, or 4,200,000 cwt a year to keep her existing jute factors.

1012

consumption of 195,000 cwt. The Scotch power-looms alone consume 73,600 cwt. a week, or 3,710,000 cwt. a year. Although in some respects this estimate has been disturbed, it is relatively correct for the present year 1887-88.

France requires 4,000 bales a week, its largest consumer, Sant Frersy, requiring 700 bales; Germany requires 2,170 a week, of which the Brunswick Jute Spinning Company consume 770 bales; Belgium requires 8,15 bales a week; Austra, S80, Spain, 250; Holland, 400; Norway, 100. Taking annual figures for the whole of Europe is found that Grat Britain and the Continent of Europe require 1,800,000 bales a year, of 2,428,580 ext. It may be here stated that as merchants adopt the caleridar year, and Government the financial, ϵ_R , from April to March, considerable difficulty has been experienced in companing the Government Statistical Tables of Exports with those kindly supplied by one or two well known jute firms in Calcuita.

1913

Comparing with the above figures the 22 Indian factories at work in Incomparing with the above figures the 22 Indian factories at work in the comparing the

were required, a saumed by America, Australia, and other foreign countries, vis, booked bales, or 2,142,498 cut, not included in the above calculation, the annual bales, or 2,142,498 cut, not included in the above calculation, the annual bales, or 2,142,498 cut, not included in the above calculation.

Annual Capital. 1914 Looking at the exportation of raw jute, of manufactured jute, and the home (Indian) consumption known to our commercial men, the statement hat the jute trade is at least represented at the present date by annual consumption of over 15,000,000 cevt. of raw jute does not seem to be far from correct This is roughly equivalent to an annual turn over of capital equal to about 12—14 millions of pounds sterling as compared with the exports in 1828 of £62.

MANUPAC-TURES. IQIS

THE MANUFACTURES OF JUTE AND THEIR EXPORTATION FROM INDIA.

and anstrated
Li to Calk Comnuonal
The
o to 40

C, 1915

of European Commerce.

CORCHORUS.

dles, and they give employment to 29,660 men, 11,198 women, 5,113 young persons, and 3,044 children The Madras private jute company employs about 878 persons. Thus, up to the present date, there are in all India 24 Jute factories, which give employment to 49 015 persons and use They are almost exclusively employed in the up 2,860,088 cwt of jute gunny bag or cloth trade, three only doing a small business in cordage, floor cloth, or other manufactures

ir cloth, or other manufactures ale spindles, and In India there MANUFAC-TURES.

t the details of every individual factory ludging from the published statistics of jute factories in Scotland during the year 1870, and comparing a fixed number of these with the Indian factories for the same year, we may, however, conclude that the Indian mill workman was inferior to the Scotch workman in the ratio of 3 to 7. That is to say, it requires 7 persons to work one loom in an Indian factory, against 3 workmen in a Scotch factory This conclusion is arrived at by dividing the total number of persons employed in a factory by the number

age for all Scotch factories and the av course this calculation is open to tl factories not manufacturing the sam

may be accepted as giving some sort of comparison.

Foreign Trade in Manufac-tures. 1917

1916

FORFIGN TRADE IN MANUFACTURES.

Prior to 1857 the exports of Jute manufactures from India represented hand loom fabrics In 1850 these were valued at £215,078, whereas the trade in raw jute was only £197 071 Fifteen years later the manufactured jute, exported to foreign countries, was valued at R18,27,083 (£182,708) and the raw jute at R75,06,690 (£750 669) In 1870-71 the exports were of manufactured jute R34,24,249 (£342,424) worth and of raw jute R2,57,75,526 (£257,755) But the revival in the exports of manufactured rute indicated by these figures, as also the partial decline of the foreign raw jute trade, was at once the death of the old hand-loom industry and raw just trace, was at once the unant in the two measurement insulary and the birth of the new power-toom. Ten years later (1880-81) the total exports of manufactured just were valued at R.1,13 06,716 (£,1,13,0,671), of which the hand looms produced R.2,0,555; d. 2,60,555, and last year they were valued at R.1,518,577, (£,1,5,1,577), of which the hand-looms produced R0,90,555; these figures include unmarkacheby the growth of the second control of the second of the Indian power loom foreign trade and the decline of the hand loom In a further page some idea will be given of the extent of the home market for jute goods

LOCAL OR HOME CONSUMPTION

Local Consumption. 1018

tanka 1.1 ka an 1 11 ak - 3 st

CODCHODIIC

The Inte Fibre

| MANUFAC |
|-----------|
| TURES |
| Home Con- |
| sumption |

third of the number actually manufactured. The following table will show the relations of the home consumption to the exports more clearly

Statement of Home Consumptio 1 and Exports of Gunnies from 1st Fanuary to 31st December 1882

| Burma | | | | | 13 312 305 |
|-------------|--------------|----|---|---|------------|
| Stra ts | l Pers an Gu | 10 | | | 9,153,233 |
| Madras and | Malahar | ш | | • | 1,064 848 |
| Coromandel | Coast | | • | | 3 609 950 |
| Ceylon | | • | | | 177,777 |
| I Incometer | | | | | |

1919

Ceylon 177,777
Up-country by rail 11,351,000
Used in the export trade of Calcutta 11,848,742

Austral a 11,372,387 New Zealand 5 060 60 Cane of Good Hope 705 103 Maur tus 110 078 Egypt 601 078 Amer ca 20.554 51 413 700 Hongkong (not Hess ans) Great Br ta n Lurone 00, 31 Total of Fore gn Exports 41,523 607

Grand Total of Home Consumption and Foreign Exports

Total of Home Consumpt on

119 04" 771

77.519.164

The total number of gunny brigs brought to and carried from Cilcutta during the past three years may be here given and alongs de of these the foreign exports —

| | 1894-85 | 1885-86 | 1836-87 |
|--|---------------------------|---------------------------|---------------------------|
| Imports Total Exports (to other pro vinces of Ind a and to so e gn | 18 195 002 137,870,318 | 20 6 6 541 127 084 964 | 23 596 402 124 957,225 |
| countries) Fore gn exports only | 82,779 207 | 63 760 546 | 64 572 157 |

1020

1 before

total production of gunny bags in Bengal was perhaps I tile so to millions, of which 641 millions were sent to fore gn countries and 851 millions used up in Inda This may be accepted as representing the bags employed in the home, cotton, olseed, rec, and wheat trade, and

225) ards - nterportal i quant ty 3 267,418 n to these ver borne

Of Furonean Commerce

CORCHORUS

Traffic of Bengal for 1887 states that 605 846 pieces were sent upcountry by river "direct from the jute mills without passing the Port Commissioner's wharves" A piece of power-loom gunny is equal to 80 yards, of hand-loom, to 22 yards, so that this power-loom trade alone re-

Home Consumption

industry is conducted in Dinagepore, Purneah, Rungpore, Julpaiguri, and Tipperah, Julpaiguri turned out last year 2,336,660 and Rungpore 1,222,410 hand-loom made bacs

CLASSIFICATION OF THE TUTE MANUFACTURES

IQ2I

The manufactures from jute or pat may be referred to three primary sections -

These three sections may each be referred to a number of sub-divisions, which for convenience may be arranged in two leading groups, vis, native and indigenous manufactures, "hand loom," and European or "power loom" manufactures, whether made in Europe or in India We shall first enumerate the indigenous manufactures, since these bear on the history of the industry.

INDIGENOUS MANUFACTURES

Indigenous

Ind heam i talking of spon posès (or gun Hortic

20

ra, the is said tended

1st, Thick cloth used for making gunny bags Of this there are three qualities, the best being known as amrabati These correspond to the three qualities of hand-loom gunnies in commerce

The Jute Fibre.

CLASSIFICA-TION OF MA-NUFACTURES 2nd, Fine cloth —This is generally known by the name of mills dhokra, and is chiefly used as a cloth to sleep on, it is often beautifully

striped blue or red
3rd Coarse cloth -This is largely used for making the sails of country

boats (gun), and also for bags to hold large seeds or fruits

The following are the principal districts in Bengal where indigenous jute manufactures (hand-looms) may be said to exist to any considerable extent —Hugli, consuming about 1,20 oon maunds of jute a year, Dacca, 00,000, Rungpore, 50 000, Morshedabad, 38,000, Malda, 25 000, Julaagun, Pubna, &c., smaller quantitus

European Manufactures, 1023

EUROPEAN MANUPACTURES

Cloth made in Reatories — Jute is now largely used in the manufacture of carpets, curtains, shirtings, and is also mixed with silk or used for imitating silk fabrics. It has been applied extensively as a substitute for hemp for this purpose the fibres are rendered soft and flexible by being sprinkled with water and oil, in the proportion of 20 tons of water and 2) tons of train oil to 100 tons of jute. Sprinkled with his the jute is left for from 24 to 48 hours, when after being squeezed by rollers and heatbay, the fibres become beautifully soft and munitely isolated, and thereby

the

and and other fibres were not adulterated with jute. In 1832 an enterprising Dundee manufacturer experimented once more on the fibre, and the result was that he was able to show that it might be used as a substitute for hemp. From that date jute gained rapidly in public favour. It is

op-581.

104

are almost exclusively the various forms of gunnies

WHISKEY.

JUTE WHISKEY.

In concluding this account of jute it may be mentioned as a curios! at that been proposed to utilize the jute ends in the preparat on of a spirit which somewhat resembles the whiskey made from grain waste Ture is by means of sulphuric and converted into sugar and the resulting product thereafter fermented and distilled

CORDIA, Linn , Gen Pl , II , 838

1925

Cordia fragrantissima, Kurz, Fl Br Ind, IV, 139, BORAGINEZ
Vern - Kalamet toungkalamet Burn

References - Aurs, For F! Burm, 207; Gamble, Man Timb, 171

C, 1925

CORDIA

| The Sebesten Fruit | Myxa. |
|--|--|
| Habitat.—A deciduous tree of Burma, chiefly in the hills of Martaban and Tenasserim. Structure of the Wood.—Wood moderately hard, reddish-brown with darker streaks, beautifully mortled, has a fragrant scent, should be better known. It has a handsome graun, and its fresh, fragrant adour make it very pleasant to use. Pieces sent to London for sale in 1878 realized £4-10 per ton (Gamble). | тімвек. 1926 |
| Cordia latifolia, Roxb.; see C obliqua, Willd. | |
| C. Macleodii, Hook f. & Th.; Fl. Br. Ind., IV, 139. | 1927 |
| Vett — Dhongan, dhanan, dhalan, dewan, doh, dahpalik, dhigan, Hivo, Reula, poppada, Kov., Bharwar, bedauman, Kanwar, Yugua, Sintali, Dharwan, Sattana, Thanan, Kanwar, Yugua, Sintali, Dharwan, Sattan, Dharwan, dhaman, dairasa, dham, bati, Mar, Bat, Govo, Luari Assam'ar, Kurko, Gonda, Rai, Godela, Mikwara, Gastri, Ajuren References—Brands, For Fi, 337; Gamble, Man Timb, 371; Duthie, Report on Bat Tour in Merwara, 17, Griffith, Gale Your Nat Hist, 111, 333, Badan Pooul, Po Fr, 357, Lubod, VP Bomb, 103 | |
| HabitatA middling-sized deciduous tree of Central India, the Con- | |
| can, and Belgaum Gum.—Mr. E A Fraser (Assistant Political Agent) says that in Rap- putána this tree affords a gum Medicine.—The Santalis use the bark medicinally in jaundice (Camp- bell). Structure of the Wood —Heartwood light-brown, beautifully motified with darker veins, even-grained, very hard, strong, tough, and elastice, seasons well and works easily. It is used for furnitee, picture-frases, and other ornamental work, also for fishing-rods, which are said to be excellen! It deserves to be better known and more used. The Santals | GUM. 1928 MEDICINE. 1929 TIMBER. 1930 |
| value the timber for making bullock yokes | |
| C. MyxA, Linn: Fl Br. Ind, IV, 136; Wight, Ic, 1.169 This fruit is known as the Sepertry by Anglo-Indians. Vern——Actora, boholders, Br Embrain Kot kars, Micconick separation prints grander right grander right glander photo | 193r |
| blobar bloba blobar bloba All the street of the street | |
| | |

| CORDIA Myxa. | The Sebesten Fruit | | |
|------------------------------------|--|--|--|
| | Pr. 169, Sind Gas. 559, Bomb Gas. XV, 65; XIII. 23 VII. 42, Ind For. VII. 82, IX. 216, Smith, Dic. 374, Kew Off Guide to the Miss of Ec. Bod. 58. | | |
| | ofet, Cen- | | |
| GUM | trai, and South inute Mr. Atkinson says it is cultivated throughout the pluns is wild along the Himalisyas, and flowers in March and April, the fruit ripening in May to July Gum.—Said to yield a gum in Raiputána. | | |
| 1032 DYE. 1933 | Bhas sto D or of Remont (pp 32) seed in juice of | | |
| FIBRE 1934 | caulk- | | |
| MEDICINE. 1935 | · · | | |
| | •••• | | |
| | 1 d - 2 1 (, - Pre- 2 to Ubitation | | |
| | The marks of | | |
| | # 5 | | |
| | | | |
| F00D Fruit. 1936 | I disconsistance and estarch the ripe fruits dis- il Officer, Seramfore) of a drupe, the pulp | | |
| | "The fruit when ripe is eaten by the natives and also pickled." it the smell of the nuts when cut is heavy and disagreeable, the taste of | | |
| | that the fruit, e natives 1 is | | |
| | wed Dymock f 1877-5 in the | | |
| FODDER, 1937 TIMBER, 1938 | Nasik District Födder —The leaves are given to cattle as fodder. The las insect feeds on this plant (Indian Forester, VIII, 83) Structure of the Wood —Wood grey, moderately hard. In spite of its sofiness, it is fairly strong, and seasons well, but is readily attacked by insects it is used for boat-building, well-curbs, gun-stocks, and agri- | | |
| | C. 1938 | | |

| Products of India. | 565 |
|---|-------------------|
| The Sebesten Fmit. | CORDIA Rothii. |
| cultural implements, in Bengal for canoes. It might be tried for tea- boves, It makes an excellent fuel. In a report of Chanduka in Sind (1847), it is stated that "the wood is used for sword sheaths." The Santila regard the wood as specially useful for yokes, as it does not | |
| | DOMESTIC. |
| | -,5, |
| North-Western Provinces that the leaves are used as plates, and that the viscid pulp of the fruit is used as bird-lime | |
| Cordia obliqua, Willd. | 1940 |
| This is the larger Sparsten according to Stocks, Dymock, Birdwood, &c., C. Myxa being the lesser, but the vernacular names given would imply the reverse to be the case | |
| (m ram no , P : | |
| | |
| and the second second | |

in a let to not gives this plant the releguname of Alena virt chelle, and remarks that its synonym Sleshmataka is correctly translated "phlegm-d speller"

References —Roab, Fl Ind., Ed C B C, 198, Brands, For Fl, 339, (in part) Thurstes, En Crylon Fl, 113; Dals & Cibs Bomb Fl, 173, Sind San, 603, Bomb Gas, V, T, Dymock, Mat Med W Ind., 2nd Ed, 9, 579; distinsion, Him Dist, 733, Burdwood, Bomb Pr, 58, 169, Smith, Dist, 374

Habitat - Found in Western India (especially Guzerát), from the

MEDICINE. ıď 1941 15

regarded as a demulcent ' Special Opinion —"The fruit in its raw state contains a gum used benefic ally a generalized" (4)

FOOD 1942

demand

C. Rothii, Rom & Schult; Fl Br Ind , IV , 138

..

TIMBER. 1943

1044

| 560 | Dictionary of the Economic | | |
|--------------------|---|--|--|
| CORDIA vestita. | Cordage and Ropes | | |
| | *************************************** | ones of North-West, Central, and . Stocks says that it is sometime | |
| GUM 1945 | prepared at Combatore In the Bombay Gazetteer of Baroda Dist it is stated "fruit eaten by the poor and pickled, as is the gum w | | |
| fiere. 1946 | exudes from it " | t an har of how | |
| MEDICINE 1917 | Medicine -The decoction | of the bark possesses astringent properties | |
| FOOD. 1948 | | d is also pickled | |
| TIMBER. 1949 | | Used for fuel, lements Baden | |
| | Powell remarks that the wood riage poles Stocks says the | I is tough and is employed for making car- sood of the liyar is much used in Sind. | |
| 1950 | Cordia vestita, Hook f & | Th , Fl Br Ind , IV., 139 | |
| | S70 — Gerrion restitum, DC Vern — Kumbi, karik Pb , Kum paiman, pin, indák, chinta, ajárta bairula, berula, Hipp | | |
| | References -Brandis, Atkinson, Econ Prof. | For Fl 338; Gamble, Man Timb, 271, A W P, V, 81, Baden Powell, Fb Pr, 575 | |
| | HabitatA small deciduo | as tree of the sub Himálayan tract, irom | |
| MEDICINE. | the Jhelum to the Sarda River and Oudh Medicine - Fruit used similarly to the other species, and when npe is an article of food, it is considered better than that of C Myxa Mr Atkinson states the flowers pipear in spring and the fruit speak the trains. He remarks that the fruit is full of a gelatinous pulp which is | | |
| TIMBER. 1952 | commonly eaten and considered refreshing Structure of the Wood - The wood is very similar in appearance to that of C Macleodii, except that the concentric lines are occasionally interrupted, it is strong and is used for wheel and well-work. | | |
| 1953 | | GE AND ROPES | |
| | Many fibres are used for this purpose, infact, the natives of India are care at a loss when in the forests to find a plant the brit of which will serve the purpose of a string or rope. The majority of such plants are more or less used locally in the preparation of rojes or cords, a considerable number are of commercial importance. Against the names in the following list have been placed one or in some cases to be to make the fibrer-yielding plants frequently used for cordage, or the fibres which hold a position of commercial importance (indicating greater importance than *) — | | |
| | Abroma augusta Abutijon asiaticum. A Avicenne Agave americana Almas mida (i ridge ropes) Artocarput Lakoocha. Arundo K | Banhula angulna. B racemosa B Vahli Buxa Orellana Behmera macrophylia (fisl ing nets). B mvet B mvet Bombax malabaricum. | |

Borassus flabell.forms. Broussonetia papriler -- .

Butea frondosa. Calamus Rotanz * Calotropis g gantes (-- -1 -1-** Cannabis sativa.

Careva arborea. Carvota urens Chamorops Ritch and

** Cocos nucifera (-or). * Corchorus sp (1 *) Cordia Myxa C Rothu

Crotalaria Burhia. ** C juncea (Sunn-1---,) Danhne papyracea.

Debregeasia bicolor (F : -- --D leucophylla D long folia * Desmod um til æfolium.

Dombeya umbellata Edgeworthia Gardnerit. Eriolæna spectabilis Ficus bengalensis

* Gerardinia heterophyl.z. Gnetum scandens (fish rere ** Gossypum sp (cott -)

Grewia as at ca G oppos tifolia * Hardwickia binata

Hel cteres Isora ** Hibiscus cannabinus H esculentus

H tiliaceus Holostemma Rheedel

*Ischæmum angust fol um/=Pe Laportea crenulata 411/12

CORIANDPUI

The name of the genus pecular smell of the plant plant to be veved as y and (popula ly ca led seeds) 2 ve e accord noly used as a spraces as a d ug from alm sp in Br ta n pr or to the Normas

Comandrum sativum, L. CORIANDER

Vern -DI anya or d an seed) Aotham ra (Dutt) dhenyaka k ko amali TAM I. Ла пан Вики

AIG 1515.

INE.

-6

OOD 1057

1958 ays it

MIR : 1270 1.77

I :

3

CORIANDRUM sativum.

Coriander.

Arts and Manuf., po7.

Habitat.—A cultivated plant found all over Irdia. It ecents to be sown at various seasons in the different provinces and regions of Irdia. In Bengal it is grown during the cold season: Roxburgh says this if the case "over Irdia." Voigt remarks it is sown in the cold season, the first

ally in the permitted of the permitted o

cotton and sown breadcast in October and ripens in January; occasionally it is grown as a garden crop from June to September, watering once a week being sufficient. The seed is about 10 to 120 and the order in

Edgeworth

Atkinson and everal other writers allude to it as a crop rist within the North-Western Provinces, and in Kumion it is stated to npen in Man. Nepal grows the plant to a large extent, and the imports from that corregularly figure in the reports of the Basti District, North-Western Provinces and the provinces of the Basti District, North-Western Provinces and the Provinces

In England Corander
the pield being about 15c.
grown in various other p.
proportion of the world's
ren for
centuries, drawn from India. Annale states that in the being and that
presert century Egypt got her supplies of the spice from India, and that
in Egypt it was then called Arebora shawir. Dymock remarks that
Indian Corander is runch larger than that grown in Europe, and is of an

ove d form."

Oil.— The fru is yield from 07 to 14 per cent, of a volatile oil on distillation in water. This oil is colourless or yellowish, and has the odour and the flavour of Comander. They also contain an essential oil which has

Coriander.

CORIARIA nepalensis.

been indicated by the formula CinHisO, and is therefore isomeric with borneol. By abstraction of the elements of water (by means of phosphoric anhydride) this is converted into an oil having an offensive odour

being submitted to distillation" (Professor Warden, Calcutta).

Medicine.—The medicinal properties attributed to this plant are

many,-namely, carminative, refrigerant, diuretic, tonic, and aphrodisiac. The dried fruit and the volatile oil are used as an aromatic stimulant in

and a 1 His black names at a l

MEDICINE. 1056

Greeks."

with good results (Bhagwan Dass (2nd), Assistant Surgeon, General Hospital, Rawal Pinds, Panjab) "The roasted fruit s generally used" (Dr. Bensley, Civil Surgeon, Rajshahye). "A strong decoction of the seeds with milk an (D R Thomson, M

aromatic, stimulant

Moorshedabad) Assistant Surgeon. .

useful in colics of children, ponder of fried seeds" (Shib Chunder Bhattacharji, Assistant Surgeon, In Civil Medical Charge Chanda, Central Provinces). Food -Eaten by the natives as a vegetable. The seeds are univer-

sally used as a condiment, and form one of the ingredients in curry, They are also employed in confectionery, and for flavouring spirits.

CORIARIA, Linn ; Gen. Pl , I., 429

Coriaria nepalensis, Wall.; Fl. Br. Ind., II., 44; CORIAREE,

1058

FOOD

1957

CORTARIA Coriane. nepalensis, Sind Pl., 36; O'Shaughnessy, Beng. Dispens., 270; Flück. & Hanb. Pharmacog., 221; U. S. Dispens., 15th Fd., 1621, Baden Perch, Fb. Pr., 336, 575; Athinson, Him. Dist., 749; Balfour, Cyclop., 813; Treasury of Bot., 331. Habitat -A deciduous shrub or small tree of the outer Himaliya Yunan rch, but in have been tern Provmees that station, rainford, the capital or reumaon, being in a like manner the vernacular name for Rumex acetosa. TAN Tan -All parts of the plant are rich in astringent acids which might be used for tanning or for dyeing. 1959 FOOD and Food and Fodder. - "The branches are browsed by sheep. The fruit FODDER hirst 1060 MEDICINE. ı act 1061 as a powerful poison when given in large doses. The seeds are stated to sometimes produce symptoms like tetanus. or пd πŧ 'n٠ he ıat иг5 tan or 127) species in French gardens, and its leaves are often employed as a mack dye, and were at one time extensively used an an adulterant in Senna Much has been written of the poisonous properties of the New Zealand species, the Toot-poison-Conana ruscifolia. Mr. Lander Lindsay gives an elaborate account of the properties of that plant in the British and Foreign Medico-Chirurgical Review (1865, p. 153, and 1868 p. 465) M. Riban attributes the poison of the fruit to an active principle, which he has called cornamyrtin, the composition of which is represented by the formula CsoHsoO10 a substance ranked with the glucosides The inhabitants of New Zealand extract an intoxicating beverage from the pulp of the fruit. -- brief note resinous cat, after wever, the by cattle TIMBER. arts ood t be used 1002 good, but . References to the Mediterranean or New Zealand species

| | cornus crophylla. |
|--|----------------------|
| OFII—a term often specifically applied to Avena sativa, but generically given to all cultivated grasses which yield farinaceous grains, such as Wheat, Maize, Barley, Oats, &c. When ground, Corn is designated flour or meal See Avena Vol. 1, 1031. | 1963 |
| orn-flag, see Ins | |
| orn-Indian, see Zea Mays. | |
| orn-silk—the silky stigmata of Zea Mays, from which a medicinal pre- aration is made. See Zea | 1964 |
| CORNUS, Linn.; Gen Pl., I, 950 | 1965 |
| [t 122; CORNACEÆ Cornus capitata, Wall; Fl Br Ind, Vol. II, 745, Wight, Ill, | 1966 |
| Syn.—Benthunia Progiera, Lindi Vera—Thammai, Indeal; therwor, thesi, bamaur, bamora, Hind., Tumbah, Lucha, Thorwar, thesi, Ph., Bamaura, Kumaon References—Branda, For Fi, 25, Gamble, Mar Tumb, 212, Stemart, Ph. Pl., 112, Annile, Mar Ind., 11, 25, "O Shanghness, Enga Prod. V, 73, Treasury of Bel, 328; Tham, 49, Altimon, Page Prod. V, 73, Treasury of Bel, 328; Tham, 49, Altimon, Page | |
| Habitat.—A small deciduous tree of the Himalaya, from the Beas to Bhitan, between 3,500 and 8,000 feet met with also in Khasia hills, where it is glabrous or nearly so. The Himalaya, in April and May, often becomes almost y ellow from the conspicuous cream coloured bracts which surround the flower-heads of this plant. In the North-West Himalaya, it is particularly abundant in the lower hot valley growing along with the berberry | |
| Food —Dr Stewart says that the ripe fruit is sweetish, and is ap- parently made into a preserve and eaten by the natives. It resembles a | F00D. 1967 |
| strawberry somewhat in external appearance, and ripens in October. Structure of the Wood—Whitsh, with reddish-brown heartwood, warps in seasoning, very hard, close-grained, used only for firewood. | wood. 1968 |
| . macrophylla, Wall, Fl. Br Ind, Vol II, 744 | 1969 |

Lcon Prod , V , 75

Habitat —A tree, 40 to 50 feet high, frequent in the Himalaya, from the Indus to Bhutan, between 3,000 and 8,000 feet, found by the writer in Manipur It flowers in May and June

Oil —A species closely allied to the C sanguinea, and may, like that

species, be found to afford an oil from its fruits

Food and Fodder —Goats feed on its leaves, and the natives eat the fruit Structure of the Wood —Pinkish-white, hard, close-grained, warps badly, and has an unpleasant seent, yields good gunpowder charcoal

*Cornus florida, alluded to as having a medicinal bark, very similar in its properties to the bark of Melia Azadirachta

OIL. 1970 FODDER 1971 WOOD 1972 Vetu,—Kogihi, Sutlej; Dab, Kunawar, Kasmal, bakar, ban-akir, hali, Hind.
References.—Brandis, For Fl., 253; Kurs, For Fl., I, 565; Gamble, Man Timb, 212 Stewart, Pb Pl., 111; O'Shaughnessy, Beng Dispens, 375; O'Shaughnessy, Beng. Pharm., 39, Baden Yowell, Pb. Fr., 570.

Cornus oblonga, Wall: Fl. Br. Ind . II . 744

CORUNDUM.

1973

| wood, 1974 | Habltat —A small tree of the outer Himálaya, from the Indis to Bhután, between 3,000 and 6,000 feet, met with also in the Martaban Hills, Burma, between 4,000 and 7,000 feet (Kurz). Structure of the Wood.—Pinkish-white, hard, even-grained; warps and has an unpleasant seeni. | | |
|---------------|--|--|--|
| 1975 | C. sanguinea, Linn , Fl. Br. Ind., II., 744. | | |
| | THE DOGWOOD, DOGBERRY, Or HOUNDS' TREE, a name given in con- sequence of a decoction of the bark having been formerly used for washing mangy dogs; sometimes also called the Cox ver. TREE | | |
| | References — Brands, For Fl, 253, Gamble, Man Timb, 212; O'Shavek, nessy, Beng Diephes, 375, O'Shaughnessy, Beng Pharm, 39, Cooke, Oils and Oilseeds, 38, Smith, Dic, 156. | | |
| | Habitat—A shrub or small tree found in Europe, Sheria, and in Kashmír, in the last-mentioned country at 7,000 feet in allitude. The writer found the plant also growing near a village in Chumba State, but it may there have been only cultivated. The young shoots are red in spring, and the leaves turn of that colour in autumn, hence the specific spring, and the leaves turn of that colour in autumn, hence the specific plants of the specific spring and the leaves turn of that colour in autumn, hence the specific spring and the leaves turn of that colour in autumn, hence the specific spring and the leaves turn of that colour in autumn, hence the specific spring and the leaves turn of that colour in autumn, hence the specific spring and the leaves turn of that colour in autumn, hence the specific spring and the leaves turn of that colour in autumn, hence the specific spring and the spring and the spring are spring and the spring are spring and the spring are spring as the spring are sprin | | |
| 1976 | smps smps ymas seful | | |
| | Seria. | | |
| W00D. | the &c | | |
| | Coromandel or Calamander-Wood, see Diospyros quesita and D hirsuta | | |
| | Coroxylon Griffithii, a misprint which appears in Balfour's Cyclofasis and in the writings of other authors See Caroxylon and also Haloxylon. | | |
| | Corrosive sublimate, see Mercury. | | |
| 1978 | Corundum. EMERY STOVE, Eng ; L'EMERI, Fr.; SCHMERGEL, Germ.; SMERIG- LIO, Ital | | |
| | Vern.—Aurund, Hino ; Samada, GUJ | | |
| | C. 1978 | | |

Commdum or Emery Stone.

CORYDALIS Govaniana.

The finest quality of Corundum is perhaps that obtained far between al. D . I Canan horn

Punyghee in the Bellary district, North Arcot district, Kistna and Godavari, and Hyderabad territory, and on into the Central Provinces

Coundatore, p 23) Emery is said to be largely exported to Bombay (Madras Manual of Administration, II, 38, Settlement Report of Upper Godavery Dist., 42 , Balfour, Cyclopædia of India, 816)

CORYDALIS, Linn , Gen Pl , I , 55

Corydalis Govaniana, Wall, Fl Br Ind, Vol 1, 124; Royle,

Vern .- Bhutkis, bhutkess, HIND & BENG ; Bhutakesi, SANS (Dutt. Mat Med Hind)

Some doubt seems to prevail as to the source of the budkhes of the drug shops Stewart says that in the Ravi basin that name is given to the root of a Ptychotis

References -Stewart, Pb Pl, 10, 109 Pharm Ind, 23, O'Shaughnessy, Beng Dispens, 185, U C Dutt, Mat Med Hind, 294

Habitat .- A small herbaceous plant, found in the North-West Hima-

MEDICINE. 1081

Corydalla, 1082

in solution to dogs without inconvenience" "The Corydalis tuberosa and fabacea in Europe have a bitter acrid root, usually sold as Aristologiiis root, and used chiefly as an external

C. 1982

1070

1080

| 3/7 | • |
|-------------------------------|--|
| CORYLUS Avellana. | The European Hazel. |
| 1983 | application to indolent tumors. The small quantity in our possession alone prevented the Cory Lilia and its salts from being extensively iried in the treatment of ague. The chemical properties of the salts are closely analogous to those of morphia and anarcotion, an interest of the control of these orders to the Raham counters, through Copits and to BERRETRIBE to through the berberry or ration texture, is similarly borne out by their chemical and medicinal properties. (See the next species and compare with the remarks under Copits Texta, C. No 1959, and Berbers Lycium, B. No. 460; also Picrofina Karros). The Turkey-corn or Turkey-pea (Corydalis formosa) contains in its roots, according to Mr. W. T. Werzell, the alkaloid corydaline, formed, the control of the c |
| nedicine. | the alkaloid (Coryduline) found in the European species—Corydans thereous. The roots of all these plants are supposed to be tonic, duretic, and alterative, and are prescribed in syphidite, scrofulous, and cutaneous affections, in the dose of from 10 to 30 grains. The drug is also often used in the form of a decoction or tincture. |
| | Corydalis ramosa, Wall, Ft. Br. Ind., I, 125. Dr. Aitchison, in his Flori of the Kuram Valley (Luncain S. e. Journally, V. 1955), as that in Kuram this common Himflayin scrambing Ally, pigg. 145), says that in Kuram this common Himflayin scrambing in the treatment of eye in the state of the state of the state of the state of the treatment of eye in the state of the |
| 1985 | CORYLUS, Tourn, Gen Pl, III., 406. Corylus Avellana, Linn, Curulifere. |
| 1905 | THE ECROPEAN HAZEL. |
| | Vern.—Findst, bindst, livon, Press, Chalgest, Press References.—Brashli Fr. Ft., 22, Gamble, Alba Timb 320; O'Shret mrity, Bring Durens, 600, U. S. Dupens, 15th Ed., 177; Bain Powell, Fb. Pr., 23, 355 |
| MEDICINE | s, ac It is to he |
| 1086 F00D Nuts. 1087 | a and sold in the Upper and Central |

CORVEHA

| The Fan Palm of South India. un | CORVPHA nbraculifera |
|--|--|
| Corylus Colurna, Linn | 1988 |
| Syn C LACERA, Well | , |
| | |
| Habitat—A moderate sized tree of the North-West Himálaya, b appear in March and Apni, ar bear every third year, and yie (Athinson). | ld |
| • | on. 1989 |
| mention is however, made although the plant is sufficient much so as to bestrew the ground for miles with the nuts Medicine.—The nuts are not uncommon in drug-sellers' shops, being considered tonic food—The nuts are smaller than the European variety, but a consistent of the various anistan are cognised. It is the common than the com | Nuts 1000 F00D Nuts Id 1001 |
| heads Structure of the Wood —Pinkish white, moderately hard It is on used locally, but it is well grained and does not warp, and deserves to better known, especially as many specimens shew a fine shining gra resembling Bird's eye Maple | ly Wood be 1992 |
| C. ferox, Wall; Gamble, Man Timb, 390 | Ì |
| Vern — Curn, Nerst, Langura, Bituria. Habitat — A small tree of Nepal and Sikkim, 8,000 to 10,000 feet Food — The fruit is covered with a prickly cup, the kernel is edible Stracture of the Wood — Pinkish white, moderately hard, eve grained | F00D Nuts, 1993 W60D 1994 |
| CORYPHA, Linn, Gen, Pl, III, 922 Corypha umbraculifera, Linn, Pulmz | |
| THE TALIFOT PALM OF CEYLON AND THE FAN PALM OF SOU | ти 1995 |
| Vern — T panos, | , |
| Bajar , 99 Vaigt, Hort S F1 Burm, II, 5; Bomb F1, Supp. 6 , 74, 1 t 8, 5 V. | ub 21, |
| , 74, 1 t 8, Sv II al | ter |

CORYPHA umbraculifera.

The Fan Palm of South India.

Ellot, Flora Andhrica, 169, Madras, Man Admin, 27, Mooden Sheriff, Supp Pharm Ind, 116, Druvy, U Pl, 159, Royle, Fib Pl, 98; Kew Off. Guide to the Mus of Ec Bol, 77; Kew Off. Guite to Bot Gardens and Arboretum, 33

Habitat,-A large tree of Cevlon and the Malabar Coast, cultivated

in Bengal and Burma But Roxburgh says it is "a native of Bengal,

misleading. FIBRE

Fibre -The leaves are made into fans, mats, and umbrellas, and are

ROXDUIKII LUI or at they are " 531d

Fibre-bundle. 1997

Leaves. 1000

٠.

Paper (olas). 1998

Braids.

1999 Hats.

2000 FOOD

employed, the leaves are taken whilst tender, and after separating it central ribs, they are cut into strips and boiled in spring-water. They are dried first in the shade and afterwards in the sun, then made into rolls and kept in store, or sent to the market for sale. Before they are fit for writing on they are subjected to a second process. A smooth plank of areca palm is tied horizontally between two trees each old is then drawn backdamped, becomes - moisture

wards an

dnes up, it is necessary to renew it the the check is co. , etc. The water caves at · 0) 01 15

construction of straw or Leghorn hats. Food -A kind of sago is yielded by the pith Little information of a definite kind can be discovered as to the extent in which this strich is used in India as an article of food, nor as to the methods adopted in its

i slips of ing into

d'in the

SEO. 2001 C, 2001

| Cama Dalas, the Cases | COSCINIUM |
|-------------------------|-------------|
| Sago Palm, the Coscimum | fenestratum |
| | |

preparation Knox says of Ceylon that the people "beat it in mortars to flour, and bake cakes of it, which taste much I ke white bread, it serves them instead of corn before the r harvest is ripe"

Structure of the Wood—Soft with a hard rind composed of black vascular bundles. The vascular bundles in the centre of the stem are soft Roxburgh remarks. "I do not find that the wood is put to any useful

purpose"

The tree often grows to a great size before flowering, one whose measur ments were given in the Indian Agriculturist for November 1873 as flowering at Peradeniya, Ceylon, measured height of stem 84 feet, of flower panicle 21 feet, total 105 feet, girth at 3 feet from the ground round the persistent bases of the leaves 13 feet 9 inches, at 21 feet from the ground 8 feet 3 inches age about 40 years. The leaves are very large, often 10 to 16 feet in diameter.

Domestic and Economic Uses —In addition to what has been said of

2002

Monn

DOMESTIC Beads 2003

Ornaments 2004

Ruttone

2005

2006

Furope they are now largely employed in the manufacture of buttons. The trade in these puts is chiefly carried on by Arabs

Corypha Taliera, Roxb , Cor Pi. 1 255

Vern - This be half a 1 2 2

A closely allied species to the preceding, which bears most of the ventualizar names given above and is put to the syme industrial purposes, is a native of the north eastern coast of Madras especially in Coroman del A that species may here be mentuoned by name C elata, Raxb, FI Ind sob, a stately palm and native of Bengal, where it is known as bajus, but Robourgh views C embracultera as the intermediate form between Taliera and elata, so that even if future botanists continue to view all three as distinct species, for industrial purposes, they may be regarded as but forms of one plant. It would, indeed be impressible to seconate under these plants the various properties assigned to them

COSCINIUM, Colebr , Gen Pl I 25

[MENISPERMACEÆ

Coscinium fenestratum, Colebrooke, I'l Br Ind, Vol I, 99,

2007

Habitat —An extensive climber, met with in the forests of the Western Peninsula, and distributed to Ceylon and the Straits

COSCINIUM The Coscinium fenestratum DVE Dye -In Dr. U. C Dutt's Materia Medica of the Hindus, Dar 1 15 2008

, are valuable medicines, and peculiarities, could not be disuring under one mistake, he om the Vinivel-getta, Ceylon General for identification

this species as Colomba root, Mara mantal Ainshe says,

but this was apparently unknown " it is sometimes used as a venow ove. to Roxburgh

Dr. Bidie remarks. "This wood contains much colouring matter, akin in properties to that of turmeric," hence the name j r-ki-halds or ghach halds Dr McCann, and also Mr Liotard, allude to the properties of this dye as closely resembling turmeric. The former author says of

red ter which the dye is squeezed out of it. The cloth to be dyed is steeped in the dye three times, and dried in the shade after each steeping" It may

he

MEDICINE Root 2000

also be combined with turmeric and other dye-stuffs Medicine -Ainslie says "Mara-manjal is the I amil name of a round, yellow coloured, bitterish root, common in the bazar, about one inch in circumference, employed in preparing certain cooling limiments for the head, and is also used as a yellow dye, it is brought from the mountains, but I have endeavoured in vain to ascertain the plant" At present the root is extensively used in the hospitals of the Madras Presidency as an efficient bitter tonic A writer quoted by Christie says of Ceylon that this root is viewed as "a very good substitute for Calumba I have used it

It has also antiwith good results in the form of tincture and infusion a wounds · redica of r with), and stormittent er states nd that 3erberis

2010

rberine The drug is sometimes sold as calumba root or for berberry, from which it may easily enough be distinguished by the peculiar structure of the wood Bright, greenish yellow, with open porous structure, devoid of It is, bes des. concentric rings, but having pronounced medullary rays bighter and softer than berberry wood Dymock remarks . "I have not met with any account of it in native works, but there is reason to believe that it has sometimes been confounded with Dirhalal, the stem of the berberry It is sometimes mentioned in the drug sales of Furope as False Calumba or Tree Turmenc, the latter being literally a translation of many of the vernacular names of the plant

2011

Special Opinions .- "Usad in diabetes It is also stomachic " (Surgeon-Major D R Thomson, M D, C I E, Milris) "Used also in cases of suppression of lochia" (Surgeon Major J. J. L. Ratton, M.D., M.C.,

The Costno

COSTUS

Silem) "This has been in use for some years in the hospital and found to be a fairly useful medicine in certain cases of dyspepsia. I think it a fairly good substitute for calumba It has been used in the form of powder and infus on Preparations, &c —The same as calumba."

or powder and mass on Irepatations, ac—Ire sample (Apolineary J. G. Ashworth, In Helded charge, Kumbakonam)

Trade—The root is sold in Madras at R1½ per maund, and retailed at a annas a pound. There are no foreign exports of the root from India but it may be had in every large bargar throughout the country, so that

there must be a considerable local demand.

TRADE 2012

Cosmetic Bark, see Murraya exotica, Linn.

COSTUS, Linn.; Gen Pl , III , 646

Costus arabicus, see Saussurea Lappa and hypoleuca, Compositat

C. speciosus, Sm , Wight, Ic , 2014 , Scitamine #

2013

Tsana speciosa, Gmelin, IV, and the Herba spiralis hirsuta of

Hort Sub Cal,

a T

h easily enough be exported from Bengal were some effort made to bring this root before the perfumers of Europe

There is a strong probability,

doubt however, that the latter and not the former is the drug sold in Indian bazars, but it is curious how the mistake of confusing two so widely distinct plants could ever have occurred. It has been deemed

| 580 | Dictionary of the Economic |
|--|--|
| COSTUS speciosus | The Costus |
| 2015 | desirable to leave the available information in its present form, since it by no means established that Costus speciosus is not used as a substitut for Saussurea. § "Piesse's remarks must apply to Aplotaxis (= Saussarea), not to |
| MEDICINE Tubers. 2016 | roots are quite insi s a depurative and ild be always serect tubers of Costus speciosus are regularly used by the natives of Ind shot as food and mediane. The late Dr. U. O. Dutt. wrote on the margin o a copy of the at the Calcut (where a brief Saussurea is b ven, — lins tool is said to be bettel, astringent, and |
| | pam in the intriow the p writer and was Costus, not Saussu alluded to, Dr Dymock says — |
| | The kursures, but success the subject, although they bear no resemblance to each other) perhaps for the past 200 years, but at the same time there is a certain amount of Costus specious root deliberately used, and not from any idea of adulteration with the supposed Costus of the uncents. Sir Water Elliot gives several Sanshrit synonyms for Costus speciosus. He may have been mistaken as to these synonyms but he dealy recognised what the Costus speciosus of botanists ment, as he decreased the plant. He refers to Rashurgh's Flors Indica Vol. 1. 8 of the Coronnadel plants, page 126 and states that while Robert root in these works gives Bomma Rachehaka as the Telegu for Zurgenstein these works gives Bomma Rachehaka as the Telegu for Zurgenstein which abounds in the forests of this province. The Sankrit synonym which abounds in the forests of this province. The Sankrit synonym and the support of the |
| FOOD Tubers 2017 Sweetmeats 2018 | there is near of execuse the autous that it is the root of a p is the |

Cotula or Babuna Alo ne Stocks

COTILLA anthemoides

2010

woon 2020

2021

WOOD

2022

Froit. 2024

2025

the root stock is said to be used as a substitute for ginger. Dr. Dymock comment ng on the statement remarks. The rh zome resembles the

SU CETT TO HAVOUR IT E HEVU A CAT DUE SAYS L by the Santals

COTONEASTER, Medik Gen Pl I 627

FROSACEÆ Cotoneaster acuminata, Linil Fl Br Ind Vol II 385,

Vern -R u roung r us rusn sh Hind

References -Brand s For Fl 200 Gamble Ma: Tin b 171

Hab tat -A dec duous shrub of the H malaya from the Beas to S k k m a d occurr ng bet yeen a 500 and 13 000 feet

Structure of the Wood -Hard 1ke that of C bacillaris used for walk ng st cks

C bacıllarıs, Wall Fl Br Ind., Vol II 384

Vern -Ri ru In I nu lehan khár s luni rau reúsh reús rish sícl u

R

Hab tat -A small dec duous tree of the Salt Range above 1 500 feet of the North West H malaya from the Indus to the Sarda between 5 000 and 10 000 feet and of S kk m and Bhutan

Structure of the Wood -W

smooth very hard close and Used for making walking sticl usually made of this vood and the end also suchable that our e port ng it to the pla ns from many points along the H málaya. This is the Cotoneaster obtusa alluded to in the Settlement Report of the S mla d stret n vh ch t s sa d the h ll tr bes use the st cks as goads (cl +ta) The larger pieces are made into jampan poles axe handles &c Baden Powell suggests that t s su table for tur ng

C microphylla, Wall Il Br I d II 385 2023

Cotton and Cotton Manufactures see the article Gossypum in

Vol III

COTULA, Lim Ger Pl II 48 Cotula anthemoides, Litt Fl Br Itt III 316 Composite Vern - Babéna Pa HIND

C 2025

| • | 7 7 |
|------------------------------|--|
| CRAMBE cord.folia | The Cow Tree |
| MEDICINE. Fowers. 2023 | Hab int.—A small berbaceous plant found in the Gangetic pla.n, from Rajmabal and Siktim westwards to the Parjab. Med.case.—It furnishes part of the officinal babling, which is heared with oil and appl ed externally in theumatism, &c. Compare with Arthena scobing, Linn., A. 1185. § "The infix on its used as an eve wash, in most diseases of the eye (Surgeon-Major C W Culfrop, M.D, Morar). |
| | Country Borage, see Coleus aromaticus, Ecnil. : LABIATE. |
| | Cotyledon laciniata, Rexb., see Kalanche laciniata, DC. |
| | COUSINIA, Cast , Gen. Pl., II., 467. |
| 2027 | Cousinia minuta, Bour.; Fl. Br. Ind., 359; Composition |
| | STO.—C. Culcitrapisorm's, Jand & Space.; C. avalens.s, Engr Vern.—Lakates, poss kand ers, or kand ars, Ps. Reference.—Stemar. Fo Pl., 152. Reference.—Stemar. Fo Pl., 152. |
| FOOD | Habitat.—A smalling diberb, found in a wild state in some parts of the Western Panjab plains, and distributed to Afghánutan, Balach stan, and Persia. Food.—The young plant is used as a vegetable in the Salt range. |
| 2023 | (S'exar') |
| | Covellia glomerata, see Ficas glemeram, Ross., URTICACEE. |
| | Cow itch or Cowhage, see Macana prarens, DC.; Litorannosa. |
| | Cowrie, Kawrie or Cowdie Pine, commercial name for Dammara 205- tralis, see under Dammar, Hopez, and also Cananum, C. 273- |
| | Cowrie or Cowry, see Shells, also Beads, B 380. |
| 2029 | Cow Tree — Mary plants, with milks sap, receive the name of Cow Tree. Perhaps the only peculiarity that more repectally upenfect that name is when the sap contributes were it the Capacitable, and is wholevere. The Cow Tree Ciffers to draw separal attention, the same the first both was special attention. It is a member of the Breadard than will (Artocarpen). Several fruides efforts have been made to introduce this plant into India, see the Indian Exerctor, IX, 517. |
| | Crab's Eye, see Mela Azedarach; also Abras precatorais, A. 71- |
| | Crab Tree, ee Pyras Maias, Live, Rosscen. |
| | Crabs, see Crustacea. |
| | CRAMBE, L.17., Get. Pl., I. 93 |
| 2030 | Crambe cordifola, Sm. F. Br. Itil. I, 185; Cancertan Habitat—A to" behavens annual, with leaves nearly a fact in diameter. Frequent in the North-West Himmana, Quetta, Western |
| 2031 | There was, a field S, who to the work fort. Food.—The ground leaves are, in the Sit of Valor, earth as a port had become my and in Banach stan the root is eaten (Studies). C. 2031 |
| | |

CRATÆVA religiosa.

583

Hawthorn The Bel Fruit of some Writers CRATÆGUS, Linn , Gen Pl , I , 626

Cratægus Clarkes, Hook f., Fl. Br. Ind., II 384, ROSACEÆ

2032 A species of hawthorn met with in Kashmir, which may be viewed

as intermediate in type between the two following species C. crenulata, Roxb , Fl Br Ind , Vol II . 384

2033

WOOD

2034

2035

FOOD Flowers 2036 Fruit 2037

woo 2038

THE HIMALAYAN WHITE THORN

Syn -C Pyracantha, Persoon; Mespilus crenulata. Don

Verm -Ginger guerry, litter, Gengern, P. Vengt Hort Sub Cal Pos Brands, For Fl. 20 S Gamble Man Tinb 170 Dals & Gibs, Bomb Fl. Suff 132 Baden Powell, Pb Pr., 556 Drary, U Pl 208 Endfowr, Cycley, 856 Treastry of Bot, 341

Habitat -A large spinescent shrub of the Himalaya, from the Sutlei to Bhutan, found at alutudes from 5 000 to 8,000 feet, but in Kumaon at 2 500 feet

Structure of the Wood -White, hard, very close and even grained, used as axe handles, staves, &c

C. Oxyacantha, Linn, Fl Br Ind, II, 383

THE HAWTHORN Vern —Ring, ringo ramina pingyat, or pinyat, phindak, patákhan ban samili sursinili or sinili PB Himalayas, Ghwansa, or ghwardsa, Trans-Indus Durana Afgh

Habitat -A small tree (20-30 feet) met with in the North West Himálayas from Quetta to the Ráví basin Cultivated eastwards near villages, and in Afghanistan is a favourite tree planted near tombs

poses as the preceding

CRATÆVA, Linn , Gen Pl , I , 110

Cratæva religiosa, Forst , Fl Br Ind Vol I , 172, CAPPARIDEE Syn - Capparis trifoliata, Rozb , C Rozburghii, Ham , C Nur

VALA, Ham VALA, Ham
Vett — Barna barun bilin, bila biliana Hino , Barun, tiliochak
Beno , Tailadiu, bunbrondia, Meett, Purbong, Leccit, Barna,
barnash, Pr. Stromen karone, Pr. , Viterurane bhatavaria hida
barnash, Pr. Stromen karone, Pr. Stromen stromen hida
lineam, sarvalinga, narrola, TAM, Nirvala vituri KAN, Mar,
Usha usitu, suth manu ulimad urmada kursutit, tella ulimida tella
vele, Tet. Nivujani Coola, hadet katal Buru, Varana anna
rapha SAM, Robburgh says that is ule Title-chala of Sancket

History -L Ægle Marmelc Cratæva Marm the same verna inces and in

writers

2030

HISTORY.

2010

CRATÆVA religiosa.

Cratieva or Bel.

HISTORY

Ind), under Cratera religioza, gives the following vernicular names as

that the medicinal leaves so'd at the present day are those of Æglerict

A brief review of the confusion which exists in the I terature of with confusion with the confusion with the confusion of the confusion with the confusion of the confusion with the con

t | scribes Angle Marmelos, quotes the same botanical description, the same for a configuration of the same botanical description of the same

can kett is tr

Authors menuing when he says. "The species in question I have ever seen," nor con we presume that he was labouring under the sleet had Cratera Marmelos a war of literate plant from Highe Marmelos, see "qu'air in his two writcles upon the medican alproduct of scussed he quotes the control of the second state of the second s

name for the plant. It is worth noting that the use of the was "Bengal" practically implies that the Valdras supply was imported from that propores. Rookingth wrote his Flora Indica about the varieties of that propores. Rookingth wrote his Flora Indica about the varieties and in that he had seen the MS of Rookingth's work. In effect and in that he had seen the MS of Rookingth's work. In effect and in the proportion of Coronindel, "and is also fooles that it is a rative of the proportion of Coronindel, "and is also fooles was entirely in the love field." Is a first possible that, before the loft may are neveral to the treatment of the proportion of the proportion of the proportion of the love of the proportion of the love of the proportion of the proportion of the proportion of the love of the proportion of the love of the proportion of the proportion of the love o

The Bel Fruit and Cratava

CRATÆVA religiosa.

Botanical evidence would point to Ægle being almost insular in its character, and it may be doubted if it is even grown to any extent in the present day beyond the limits of peninsular India, it does not succeed, for example, in Northern Panjab But Cratæva is more continental in its distribution, and is therefore more likely to have been known to the

The writer's object, however, in suggesting a doubt regarding the bel fruit will be gained if greater attention is paid to the two most

useful plants-Ægle Marmelos and Cratæva religiosa

References - Roxb , Fl Ind Ed C B C , 425 Brandis For Fl , 16 hurs, For Fl Burm, I, 66 Gamble, Man Timb, 15, Dals & Gibs, Bomb Fl. 8, Stewart, Pb F Elliot Flora Andhrica

Mal Ind, II, 86, 19 deen Sheriff, Supp F 115 323 Dymock, Ma Drugs 13, Pl and Dr

tree near temples and tombs

Varieties -The Flora of British India refers the forms of Cratæva to two varieties, which seem in a measure to correspond with the species of

two varieties, which seem in a measure to correspond with the species of that genus alluded to by authors on Economic Botany Lar 1st, Nurvala Leaflets ovite-lanceolate, tiper-pointed berry ovoid-oblong—This appears to be the C. Nurvala of Hamilton and the Nurvala of Rheede Dalzell and Gibson say this form is the true "Varvenna" and is met with in the Caranjah Hill, Warree country and Arnott (in their Prod Flore Penins Int Or) speak of it as "frequent in rich moist soil on the banks of ditches and rivers on the Malabar coast, also in Mysore, where it grows to the height of 15 or 20 feet" They also state that it is the C. Tapia, Burm (in part), and also the C

mermis, Linn (in bart) With the av ent on of the middle narrownh

Marmelo

I 459) 1 elley in

SANS that write of Ægle

the most

pellucid granus in the tissue would be proof positive of the leaf not being Cratava Ainshe further states however, of his plant that "the root, as ub-aromatic and bitterish taste,

quality " He further observes f Rheede, and the lunu-zarna talogue of Ceylon Plants, affirms

ie next variety. This is therefore, the only serious mistake made by Ainslie in his attempt to distinguish the two forms of Cratæva

Var 2nd, Roxburghu Levies small orate-lanceolate abruptly acuminate, berry globose - This is C Roxburghi, Br, and the C odora religiosa, and unilocularis of Hamilton, and the Capparis trilocularis of

HISTORY

Var 1 t. 204I

Var. 2nd Roxburghil 2012

CRATEVA religiosa

Forms of Cratero

VARIFFIES

Roxburgh. Dalzell and Gibson say it is common on the banks of the Nerbudda . Roxburgh that it is 4-

Varana, Sans He further calls it the "Smooth Tapia or Garlic Pear," the latter name, as he explains,

tea-spoonful twice or thrice daily" Sir Wafter Elliot alludes to this form in his Flora Andhrica (pp 180, 185, 187), and gives it the Telegu

Leaves 2013 Rack 2044 Fruits 2015

names of ulimidi, usiki manu, tella-ulimidi It may be worth pointing out that it is the leaves of variety Nurvala

- in the pris ng that he does not tell us whether or not the natives of India were in his

another Jamuca species, C gynandra, he says "that the root blisters like cantharides"

These facts are of the greatest importance, in the confirmation which they afford to the opinions, expressed on a further page, by Dr Moodeen Sheriff, as to the rubefacient properties of the leives It would be instructive to learn whether these properties were common to both forms of C religiosa, or only possessed by the form which bears Dr. Roxburgh's name There is also another point of some importance Alnslie in his article on "Cratzera Marmelos" (Mat. Ind., J., 28), which is clerit an account of Ægie Marmelos, and again, in the 2nd paragraph of his article on "Cratzera religiosa," refers to a resin found within the fruit. which he regards as of great value "in clearing foul ulcers " It is also used. he informs us, "in the arts as a cement." This result and cement is well tated that

to form a

w different Ægle and

Cement 2010

Cratæva becomes possible

MORDANT 2017 MEDICINE

Gum and Dye -"Aitchison states that at Jhelum the fruit is mixed with mortar to form a strong cement, and the rind as a mordant in d) eng

(Stewart) Medicine -From what has been said it may be inferred that some

doubt still exists as to whether the medicinal products of Cratzers can be spoken of as afforded by the one species or two species The writer must

A name which does not appear now to be in use in Hindustan, although men soned by the older writers. C. 2047

| | The Nurvala | CRATÆVA religiosa. |
|-----------|---|-------------------------|
| | 17 11 1 sales and also ask leads and falls | MEDICINE. |
| | | Eark 2048 Leaves, |
| | | 2049 |
| | • | |
| in rheun | complaint of a somewhat obscure nature. The leaf-junce is given tatism in the Concan in doses of \(\frac{1}{2}\) to 3 tolar, mixed with since and the leaf is | Juice. |
| | 9 | |
| • | | |
| Lingai, 1 | AM," that "the leaves, bark, and roots are used medicinally." | I |
| • | will iras. | |

hadur. lightblown, hooceasty halo, evel-plaints, Osea ioi grams, models, writing-boards, combs, and in turnery. In Trichinopoly it is also used "for making planks and as firewood"

r and

CRATOXYLON, Blume, Gen Pl, I, 166
[HYPERICINEE
Cratoxylon formosum, Benth et Hook, Fl Br Ind, I, 258,

CRINUM.

| | A large tree, met with in the Andaman Islands, yields a useful timber but the tree is rare (Kurs, For. Fl. Burm, 1, 84). |
|-----------------------|---|
| 2055 | C. nerufolium, Kurs, Fl Br Ind, I, 257 |
| | Vern —Baibya Burm |
| 1000b 2056 | Habitat —A moderate-sized tree, found in Chittingong and Burma Structure of the Wood —Dark grey, hard, close-gruned According to Kurz, it is used for building purposes, for ploughs, handles of chisels hammers, and other implements |
| | CRESSA, Linn , Gen Pl., II , 881 |
| 2057 | Cressa cretica, Linn , Fl Br Ind , IV., 225; CONVOLVULACEE |
| 21 | Vern —Gu:, Sino, Khordi, Bous, Chavel, Nasik (Boun), Uph- sanges lut. (Sir Walter Elhot remarks regarding the above Tele- name that "the plant is so called from frequenting salt lands near the sea, |
| | where it has much the look of young Chemia or Cicer) ! References - Revb F I Ind. Ed. C & C & S5, Dals and Gibs. Bomb FI 113. Vinet, Hort Sub Cai, 373, Grab. Cat. Bomb FI 133, D7, mack, Mat. Mad W Ind., and Ed. 56, Walter Elliot, Ed. Archivon. Enound Grace County of Sud Archivon. Cai. The and Sud FI p. 53, Sabkatam Arjun, Bomboy Dr. 55, 53 |
| | Habitat —A small erect shrub, common throughout the warmer parts of India especially near the coast from Multan, Baluchistán, and Sind, through Gujar it southwards to the Coromandel coast, and distributed to Ceylon Appearing in the fields after the rains |
| F00p Seeds 2058 | Food Stocks mentions that in S nd the seeds of this plant are mixed with wheaten flour Dymock mentions that in aten during the famine of |
| medicine 2059 | 'Medicate Dr Sakharam Arjun says "It is used as a tonic and is believed to possess expectorant properties" Dr Dymock remarks' "It is found in Greece, and is supposed by some to have been one of the two kinds of di θυλλίς described by Dioscorides" |
| 2060 | CRINUM, Linn, Gen Pl, III, 726 |
| | A genus so named from the Greek kpivor, a lly (Theophrastus) Item tains about sixty speces mostly natives of the trop cal regions in the old and new |
| | |
| | |

| Toxicarium. | CRINUN asiaticur |
|---|---------------------|
| [Kunth, Enum, V, p. 562; Anaryllider. Crinum amœnum, Rold, Fl Ind, Ed. C B C, 283; Herberl, 255; | 2061 |
| Vern —Gocinda, Sylher References.—Drury, Fl. Ind , III., 454; Vongt, Hort Cal , 590 | Ì |
| Habitat.—A native of Nepal, Sylhet, and Burma, flowering nearly all the year, but mainly in the hot and rainy seasons; the flowers are large and white. | |
| C. asiaticum, Linn.; var. toxicarium, Herbert, Bot. Mag., 1073. | 2062 |
| Syn.—C. The state of the state | į |
| · · · · · · · · · · · · · · · · · · · | 1 |

Habitat.—A fairly abundant cultivated plant, its erect stems with their crown of large graceful leaves forming almost a characteristic feature of

Drugs, thu , 125, sentray, It a a Dings, on 1, 19, bitte, cat Nam

erect stem in distinguishing it from C defixum, and he expresses the opnion that it may be a native of Ceylon Speaking of that region Thwaites remarks that "it is very abundant on the sea-coast of the island," and "frequently planted as a fence for native gardens near the sea"

Although thus not establi fusion in the synonymy of the Economic Botany give the

atteum. This idea has been probable future investigation may re'egate to C. defixum, C. amoenum,

probable tuture investigation may relegate to C. defixim, C. ameenum, or C. pratease much of what is here given under the popular name C. asiaticum

Medicine.—Anshe wrote in 1856." "The succulent bitterish leaves of brinse and mix with an ittle castor-oil, so forming an appication which they think insetul for repelling whitlows, and other inflammations that come at the end of the toes and fingers, the junce of the leaves is employed

MEDICINE Leaves 2063 Juice 2064

| 29- | |
|--------------------------|---|
| CRINUM pratense | Toxicarium—a useful Emetic. |
| MEDICINE Root 2005 | for the ear-ache in Upper India. In Java, by Horsfield's account, this plant is reckneed one of the most satisfactory emetics the inhabitants have? "It is the root (Public betweet that is the emetic, provided a little of the junce is swallowed." Sir William O Shaughnessy, who wrote some 20 years later, says: "" into a paste, a emetic after a phoretic, we have never known it to occasion any untoward symptoms. |
| Extract 2006 | The dried sliced roots are also an efficient emetic, but require to be given in double the dose of the recent article. The extract, whether watery or alcoholic, is very uncertain in its action. In the form of a syrup it may probably be found to retain the native principles of the recent plant. The functure of the fresh plant does not succeed, doubtless in consequence of the large quantity of spirit counteracting the emetic effect by its stimulating energy. |
| | These two passages express all that has since appeared, as for example, in the Planancopeus of India, Driry, Murray, K. L. De, and indeed most subsequent writers, repeat in other sentences the same facts Dr. Dymock adds "I have not met with any account of this drug in native works on the same facts." |
| | as a footnote. A well known popular use of the plant, the leaves are slightly roasted, and the junce is then expressed and a few drops poured into the ear. |
| Bulb 2067 | The bulb of the so-called Crimim assaticum is made officinal in the |
| | manns (Dr. H W Hill, Manbhoom) [2208. |
| 2068 | Crinum defixum, Ker (and of Gaul), Herbert, p. 2551 Bot, Mag, Syn—C. Asiaticus, Roob, (non Lunn), P. Ind., Ed. C. C., 283; C. ROXBURGHI, Dale, F.H. Borb, 135, DELUTE, POLG TALE, Reade, M.I., 28, Radix Touchant Secusion, Ramph, V.I. 159 Vetta—Suk Barchan, Beng, Nagdyon, Bonsy, Exter cheltu, Tel. j Hindato, Sixo (seconding to Ainsie) R. Habitat—A native of the Concan, of Coronandel, and of many parts of Bengal, as, for example, the Sunderbands—Flowers large, seedile, white, fragrant during night, Howers large, the close of the close of the close of the parks of the parts of Bengal, as, for example, the sunderbands—flowers large, seedile, white, fragrant during night, Howers on the banks of transparence on Dalzell and Gibson say it is common on the banks of adds |
| | dis- sces ud |
| MEDICINE | *** |
| 2009 2070 | C. pratense, Herbert, Amaryll., 256. |
| · | Syn -C LONGIPOLIUM, Rosb, Fl Ind, Ed C B C, 284; C, LAURIFO- LIUM, Herbert & Rosb; C REEGANS, VENUSTUM, and CANALIFOLIUM, Carey Ven Pa laine, BURM |
| | References - Voigt, Hort Sub Cal, 590, Bot Mag, 1 2592 and 2121 |

2073

MEDICINE

Dulh

2074

2075

MEDICINE.

2076

2077

| The Common Crocodile | | alustris. |
|---|-------|-----------|
| Habitat.—A native of the interior of Bengal, Sylhet, Pegu, &c, flor in the rainy season. Flowers large, white, fragrant. A var plant, some of the names given above belonging to what may prove the common state. | ıable | 2071 |
| Crinum, sp. (found in Chutia Nagpur) | | 2072 |

Mr. C B. Clarke writes of this plant that he is unable to name it and presumes it may be an undescribed species In that case it should bear the discoverer's name—the Rev A Campbell. Mr Clarke also informs the writer that has collected another species in the tanks of Chuta Nagpur which flowers in November, he views this as distinct from the common Sunderband species, which flowers in May

Vern. - Sikyom Baha, SANTAL

Habitat -High and dry situations in Chutia Nagpur, flowering during the hot season before the leaves appear. In some respects, this resembles C latifolium as described in Roxburgh's Flora Indici

Medicine -Mr A Campbell says "The bulb is sometimes as large as a good-sized turnip, and of the same shape. A decoction prepared from it is given internally and pounded and made into a paste, it is also applied externally by the Santals in dropsy. It is used for the diarrhees of caule "

C. zevlanicum, Linn , Wight, Ic 2019-20

Syn — C Ornatum, Herbert C Zenlanicum, Rotō C Latifolium, Rotō , C Moluccanum Rotō , C Herbertianum, Herb , p 253 , also Wall , Pl 45. Rar , 2 p 145

Vern .- Sukh-darsan, Beng, Gadambikanda, Bons, Goda manil, Sing Ref - -..

Habitat -A very variable plant, some of the above synonyms corresponding to well marked var eties, which in a work on economic products, l safet he treated a lie t al. It a fa l

cumference.

Medicine - Dymock remarks of this species "The bulb is extremely acrid and is used for blistering cattle, a slice being bound upon the skin When roasted it is used as a rubefacient in rheumatism "

CROCODILE (CROCODILUS, Cur)

Crocodilus palustris, Less

THE COMMON CROCODILE, often vulgarly called in India, the Alligator-an American Reptile.

| 592 | Dictionary of the Fconomic |
|--------------------|---|
| CROCUS sativus. | The Crocodile; Saffron. |
| | There are apparently two other species besides the above met with in India, vis, C porosus, Schneid, and C. trigonops, Gray The long snouted Gaval lives on fish and turtles, and frequents the rivers of India along with the Crocodile |
| | Vern.—Magr, kumin, Hinn , Suan, Sinn Habitat.—Found throughout India and Ceylon, affecting rivers, lakes, marshes, and even the sex coast. It may be recognised by its shorter and broader snout than that of the Gaval, and by the first and the fourth tooth of the lower jaw fitting into the upper. Although held sacred in many parts of India (and sometimes even |
| 2078 | great size, being from 15 to 30 feet in length, and although it is reported to eat the dead bodies thrown into the rivers, it lives mostly on live animals, taking human beings when pressed for other food Economic Products —O'L, Seix, Musk, and First. Crocodile Flesh —It many parts, Crocodile flesh is eard to be calen or |
| 2079 2080 | Africa appear to regularly extract Forbes Watson, in his Indicatral sample of this substance procured |
| 2081 | from Travancore Crocodile Oil.—The oil of the Indian Crocodile contains a larger quantity of solidifiable fat than either neat's foot or any fish-oil. It is pre- pared by the Sanit tribe, in the Panjáb, who eat crocodile fitsh, and it also said to be procurable in abundance at Agra (Spons' Encyclop 5136) |
| 2082 | CROCUS, Lann , Gen Pl , III , 693 |
| | This is the goales of Dioscorides. It is not alluded to by the earlier Sanskir witters, but Arab an authors speak of it as cultivated in the tenth century at Durband and Ispahan and Chinese writers state that it was introduced into the ecountry by the Mushammadians in the Yore dynamy (A D 1250). |
| 2083 | Crocus sativus, Linn , Royle, Ill Him Bot , t 90 , IRIDEE. |
| | SAFFRON Vett — Yafrân, BENG; Resar, safran, Hind, Safran, hessan keern, DOMB Kecara, Mus , Kether, Guz Kukhuna, sasan keern, (Actiske), damahana (Outly Savano (Dymonock), Saka, Tahawai Anas Pinis, Kungamani, Tak, Anaham open Til, Tahawai (Mr. Oliver, Foest Officer an Burna, informs to wood sands who shade |
| | Re |
| | Sheriff, Supp Pharm Ind 118, U. (. Dutt. Stat. 8 Sheriff, Supp Pharm Ind 118, U. (. Dutt. Stat. 8 Indian Pharmacot, col. 1 Sheriff, Supp. Sheriff, State Sheriff, |

| | Saffr | n, Ind | ısn | Crops | | | | CROPS. |
|------------------|----------|--------|-----|------------|-------|------|---------|---------|
| Habitat,—The | Curopean | supply | of | this plant | comes | from | France, | SAFFRON |
| • | | | | | | | | |

DYE. 2084

highly thought of as a remedy for catarrhal affections of children, and is used in certain Indian dishes as a colouring agent. Mullahs (priesty) make a kind of ink with this substance with which they write charms (Dr. Emerson). In over doese it is generally reported to act as a nar-cotte poson Annile guess perhaps the most complete account of the native uses of this drug, and of the opinions which prevailed among

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medicine 2085

2086

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torus; Chemistry — § "The colour of saffron is due to the presence of a glucoside polychroit, which is decomposed by acids, with the formation of a new colouring principle Creent" (Prof. Warden, Calcutta) For [sill particulars as to the chemistry of this drug see the Phaymacgraphia, p

CREMISTRY 2087

Trade in Saffron —The imports of foreign saffron were in 1882 83, 226 cet valued at R4,25,124, and in 1880-87, 268 cet valued at R5,50,383 Of the Indian imports the bulk comes from France

2088

CROPS.

An important feature of Indian Agriculture is the fact that, through the presence of extensive montane tracts, India possesses considerable areas that are under temperate indiances, as well as vast expanses that are purely trop cal. Between these two conditions almost every porsible gradation exists in which the tendency to extreme andity modifies the general character. From this point of view alone is the property of the prop

sometimes tute matters a year. This is modified in certain provinces through the rains not occurring at the same period. Thus, in Bengal, Bombay, the greater part of the Central Provinces, and in Bergar, the rains

occur in June, July, August, and September, being preceded by the bot

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| | seen that to study the crops of India, the closest attention must be paid to |
| | this shifting of |
| 1 | In the regions |
| | marked crops e |
| | The temperate mountains within these regions have according to des), |
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| _ | place in this work |
| 2090 | 1st, CEREALS - This includes Wheat, Rice, Oats, Barley, Indian corn, |
| 7007 | Millets (various kinds), and Cort (Job's tears) (Conf. with Cereals) 2nd, Pulses—Such as Gram, Peas, Beans, Lentils, &c (Conf. with |
| 2091 | Pulses.) |
| 2002 | |
| -090 | or eaten boiled |
| i | he GRIMINE |
| | (ains) |
| 2003 | 4th, Spices and Condinants - Turmeric, Ginger, Cumin, Coriander |
| 2093 | Caraway, Pepper, Beter-lear, Capsicum, Cardamum, acquai |
| | Spices) Sth, Starches and Sugar.—Sugar-cane, Arrow-root, Sago, &c. (Corf. |
| 2091 | with Starches) |
| 2005 | |
| 2093 | Cabbage, Gourds, Melons, Cucumbers, &c. &c. (Conf. with Vegetables) |
| | The above might be grouped as eather products, but there are other |
| | crops some of them of even great importance, such as- |
| | |
| 2006 | 7th, Fibres - Cotton, Silk, Jute, Sunn-hemp, and many others, the |
| | |
| | portant of fibre crops (Conf with Fibres) 8th, Dres-Indigo, Safflower, Al (Monada tinctona), Madder, &c. |
| 2097 | 8th, Dyes-Indigo, Safflower, Al (Morinda tinctoria), All |
| | (Conf with Dyes and Tans) (Conf. Tea, and Coffee (Conf. |
| 2098 | (Conf with Dres and Tans) oth, Nakcorice,—Opium, Ganja, Tobacco, Tea, and Coffee. (Conf. with the apparate accounts of each of these products and with the article Marchive. |
| | Narcotics) |
| | · |
| | C. 2098 |
| | |
| | |

EROTALARIA Crops: Sunn-Hemp. iuncea.

10th, OIL-SEEDS -Ground-nut, Rape, Mustard, Cotton-seed, Linseed, Opium-seed, Castor-oil, Gingelly or Sesame oil, &c (Conf. with

2000

These are the principal crops of India, but the agriculturists have

CROTALARIA, Gen. Pl , I , 479.

2100

A genus of plants closely allied to the Broom, the generic name being derived from the Greek sporator (a castanet), in allusion to the rattleg noise made by the loose seeds within the inflated pods. This same idea, according to Sir Walter Elliot, is implied by the Sanskrit name Ghantar attemu

Crotalaria Burhia, Hamilt, Fl. Br. Ind , II , 66, LEGUMINOSE

2101

Vern - Sis, sissai, meini, pola, khippi, buta, khep, khip, khif bhata, bdi lathia, kharsan kauridla, PB, Ghagari, MAR, Ghugharo, Guz, Drunna, SIND References - 7 1

Najputana Gas . 30 ;

Habitat .- A low under-shrub, abundant in the sandy plains of Sind

Panjab, Rajputana, and Cambay, ascending to 4 000 feet in altitude.

Fibre. — Is said by Mr. Baden Powell to yield a good fibre for cordage, used, to some extent, in the Panjab in place of the Sunn-hemp (C. juncea) of other provinces

Medicine. - The branches and leaves are used as a cooling medicine Fodder .- The Raiputana Gazetteer states that the plant is much valued as a fodder.

FIBRE, 2102 MEDICINE. Branches. 2103 FORDER. 2104

2105

C. juncea, Linn, Il. Br Ind, II, 79

SUNN OF SUNN HEMP OF INDIAN HEMP, FALSE HEMP, BROWN HEMP, BOMBAY OF SALSETTE HEMP, WICKOO NAR (OF TRAVANCORE FLAY), JUBBULPUR HIMP, &c , &c

Syn. - C TENUIPOLIA, Roxb

Vern .- San, sanai, sani (or sun, shon), Hind, Beng, Ausa, suile,

ing to oir Wauer Elliot), Sans

According to some writers the name Ambadi or ambari is, in Western India, given to this plant, but it seems probable that that name should be restricted to Hibiscus cannabinus Indeed, it has been found difficult to arrive at any definite idea regarding the present area under sunn-hemp cultivation from the fact that the above Hibiscus appears to be confused with it. In Bengal, and indeed in some parts of the N-W Provinces,

CROTALARIA History of Sunn-Hemp juncea.

FIBRE.

nus are separately reported. It would thus appear that the term "Bombay hemp" is often, though incorrectly, given to the Ambadi fibre, Hibscus camabinus. It is thus unfortunate that, in modern commerce, the term "hemp" should ever have come to be applied to any but the true hemp plant, as, by this usage, widely dissimilar products have been almost hopelessly confused. The sunn is a bust closely allied to the English broom or the Indian dai, while the ambari is a Hibscus or cotton-looking plant with sharply-cut leaves not unlike those of the hemp plant,—hence the specific name cannabinus. The true hemp has its nearest affinity, of fibre yielding plants, in the common nettle. The hemp fibres thus alforded by these three plants have little or nothing in common.

References -Roxb, Fl Ind , Ed C B C , 545 , Voigt, Hort Sub Cal ,

Habitat —The Flore of British India gives the habitat of this plant is a Plains from the Hindhan to Ceylon but often planted for its fibre." The writer is not aware of Crotalans juncea having been recorded as found in a wild state anywhere in India although it may sometimes evist as an escape from cultivation. Kurz says of C juncea in Burm' "like wild along the banks of the larger rivers, especially the Iranadadi," and Griffiths that C, juncea is met with in Afghinistán Roxburgh describes a form which he states is a native of Coromandel Many writers here when he states is a native of Coromandel Many writers here and the states is a native of Coromandel and Caromandel familiar with the hiving plants, still affirm that C, juncea and Caromandia care distinct. They seem at least to be cultivated recognisable at might, for owing to the reputed superiority of the fibre of C tenus in might, for point and the control of the coronal caroman care found that the coronal caroman care found the coronal caroman c

· be cultivated

History of Supp-Hemp

CROTALARIA juncea

between these remotely distant regions. At the same time C, juncea is on peting for popular the Panjab and Sind which yields a fibre a superfluors.

FIBRE.

SUNN (or SAN) HEMP FIBRE.

to this day, although as yet it has not been reported as found anywhere

Under the heading Cannabis sativa the suggestion has been offered that the Greek and the Latin cannabis may have been derived from the

2106

ble references to home a Sanchet care is

ts that Even ication, r than of flax

of hemp, such names as shesh implying an intoxicating power—a property of the hempen fibres possessed alone by Cannabis sativa. The sana

Kshauma. 2107 CROTALARIA

History of Sunn-Hemn

FIDDE

the name for gr for the kshaur it was made made, the batt

made, the patt
probability the sunn hemp made garment Later writers speak of sana

The hill tribes of the North-West Himálaya weave a proportion of their clothing of hemp, but although the plant springs up wild all over the plants

Sacred Threads 2108

sana has been carried, at the present day, to the extent of violating even this injunction. Lisboa (Bombay Useful Plants, p. 200) states "It has been controlled to the state of the state

ed threads

by listify can it be even said to be a native of Persia, though it may possibly be of China, as it is of Russia, Siberra, and Kirghiz On the other hand, Croblatra Jances, while met with boday almost exclusively under cultivation, would appear to

be a native of India, and possibly also of Central Asia, many other last of Central Asia, and whole and the control of the con

. but

orefer to cultivate sunn hemp (Crotalaria juncea) or san-pat (Hinstusi canabinus) for the cordage and sacking required for agricultural purposes. There is still a further consideration, and one of some importance,—us, that on the plans of India the hemp plant does not produce fibre of any value. Unless, therefore, we are to presume thirst it has degenerated, or that the clumstic conditions of India have altered, the ancent people of the plans were not likely to have obtained their sans fibre from Canabis.

We may conclude this brief historic review of the hemp plants by grying the opinions that prevail regarding the origin of our word "hemp."

Cultivation of Sunn-Hemp

CROTALARIA

Royle in his Fibrous Plants of India traces hemp from sana Speaking of sunn-hemp he says "Its name, Shanapam or Janapa on the Madras side, is not very unlike Canapa, Hampa, Hennip, and Hanf From these we derive our own name "Hemp". In Mysore it is known as zanabu and 1

FIBRE

and
chan
Greek and Latin, and kannab in Arabic

Veda in al

CULTIVATION.

CULTIVA-TION 2100

Sunn is grown by itself or at times is cultivated in strips or around the margins of fields. It is never cultivated as a mixed crop. Through out India as a whole it is a kharyf crop,—that is to say, it is sown about the commencement of the rains and cut at the end of September or beginning of October. It is thus off the ground to allow of being followed by a rabs crop in the same year. But in some parts of India there are two crops of samn hemp. Thus in the Thana District of Bombay it is sown in November after the rice harvest, and the stalks are pulled up by the root in March. "It is also sown as a rainy season crop in sandy soils" (Gax, \(\lambda III, I, 290 \)). This system has prevailed in

"rew to the height d that it was sown een gathered in" In Kolaba it is he stalks are up-

he stalks are upt and harvested in

December by being cut when the plants are full grown. In Poona it is sown in July and ripens in October. In the Central Provinces and the North-West Provinces it is a kharif crop, being sown with the advent the trains, but in Bengal it is sown a little earl er, namely,—from the 5th Aprilto 15th June, in Madras the sowingstake place even still earlier. In the experiments performed at the Saidapet farm Madras, sunn was sown on the and of February. In the Anex Akbars the plant is described.

mean period of sowing is about the beginning of the rains (or in June),
ith and occupies the soil for

in view of the possibility of throughout the whole year flect this varying period of fibre produced. Indeed, it

more seasons each year) there may be different cultivated forms of the plant produced as the result of ancient cultivation. We are ignorant of this subject, and it seems des rable that a thorough investigation should be made. Although, as stated, everything points to sums hemp being a

Sacred Threads

2108

CROTAL ARIA History of Supp-Hemn iuncea. FIBRE. the name for er for the kshaur

it was made made, the pati

> lution in popular opinion took place until (as in the present day) san and ed ac to the fibrar h t are relegated to the

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seeing that, as far as sypium (cotton) is tri

(Book II , 44) we have of the Brahmin must I strings, that of a Cshatriya of sana thread only, and that of a Vaisya of

woollen thread" It is believed that the substitution of cotton for the sana has been carried, at the present day, to the extent of violating even Lisboa (Bombay Useful Plants, p 290) states "It this injunction

to be a wild state over the greater part of India there is little to justil) nor can it be China, as

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be a native of India, and possibly also of Central Asia, many other chaston ra and whole

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giving the opinions that prevail regarding the origin of our word " hemp. 2108

Cultivation of Sunn-Hemp

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FIBRE.

Greek and Latin, and kannab in Arabic.

CULTIVATION.

ULTIVA-TION, 2100

Sum is grown by itself or at times is callivated in strips or around the margins of fields. It is never cultivated as a marted crop. Throughout India as a whole it is a kharif crop—that is to say, it is sown about the commencement of the rains and cut at the end of September or beginning of October. It is thus off the ground to allow of being followed by a rabi crop in the same year. But in some parts of India there are two crops of sunn hemp. Thus in the India there are two crops of sunn hemp. Thus in the India District of Bombay it is sown in November after the tree harvest, and the stalks are pulled up by the root in March. "It is also sown as a rainy season trop in sandy soils" (Gas, XIII, I, 20). This system has prevailed in Thana and Suret and the stalks are the stalks are the stalks are the stalks.

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stalks are uptonicu in Matcii. In romapur it is sown in August and harveste in
December by being cut when the plants are full grown. In Poona it
is sown in July and piens in October. In the Central Provinces and
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mean period of sowing is about the beginning of the rains (or in June), since themp may be sown in almost any month and occupies the soil for 4 to 5 months. This is an important period in the probability of securing a continuous supply of fresh fibre throughout the whole year. It remains to be ascertained, however, what effect this cultivation has on the quality and quantity of fibre produced. Indeed, it is probable that (as is the case with nee and other trops sown at two or more seasons each year) there may be different cultivated forms of the plant produced as the result of ancient cultivation. We are ignorant of this subject, and though as the state that a thorough investigation should be made. Although as stated, everything points to sum hemp being a

ROTALARIA iuncea

Cultivation of Sunn Hemp

CULTIVATION OF Soll 2110

native of India, it may be doubted if the plant has ever been found in a And the existence of distinct cultivated forms might not only help to confirm the opinions given of an ancient cultivation, but might also establish the superiority of certain crops over others for textile purposes To what extent the form C. tenuifolia is cultivated is not known still less do we know how far it affords the superior sunn hemp referred to by writers on this subject

Nature of the Soil recommended for Sunn hemp -It requires a light but not necessarily rich soil, and it cannot be grown on clay It is therefore sown on the high sandy lands less suited for the more important crops This is the opinion which prevails in Bengal, but Messrs Duthie and Fuller, writing of the North-West Provinces, say "Authorities differ as to whether a rich so l is necessarily required, and y in the soil is necessary to

et it cannot be contested that st any other crop One poscory that plants of this order"

(the pea family) "can assimilate nitrogen direct from the atmosphere, and are hence less dependent on the soil for nourishment, and another explanation may be deduced from the fact that its roots penetrate deeper than those of most other crops, and can hence draw supplies from a larger body of soil." At the same time the practical experiments performed at the Saidapet farm, Madras, tend to prove that the plant would not produce so much fibre on rich as on poor soil Speaking of these experiments Mr Benson says "The seed germinated well, and the plants grew with great luxunance, but when they had reached the time for cuttin~ L The soil of this plot was a ion and watering were unfav *cond experiment was performed, the seed being sown on "a light and very sandy loam recently levelled". The land was manured with "12 loads or about 4 tons per

acre" of horse manure and the results were most favourable. In the Mysore Gazetteer it is a ated that the best soil for sanabu is the red or black used for ragi cultivation Wisset remarks that clay so is are injurious, but that on a rich soil the fibre is c dry high situations On the oth

the cultivation in the Northern C is sown towards the end of the ra

strong clayey soil suits it best

Rotation ZIII

Effects of Sunn Cultivation and the Rotation of Crops Pursued - It is all but universally believed by the Indian cultivators that sunn, I ke gram (see Cicer, C No 1067), improves the soil In the Bombiy Gasetteer (Kolhapur District, p 172) it is stated "As it is supposed to refresh the exhausted so l, it is considered a good bevad or preparatory crop, and is grown as such every second or third year in some of the fields required for sugar-cane, tobacco, and other rich crops Sometimes it is sown as a second crop and ploughed in when young as a green manure" From Poona it is reported that the leaves are considered 'excellent manure' In gardens and occasionally in dry crop lands it is grown solely for manure, the plants being ploughed into the soil when ready to flower." The Director of Agriculture in Bengal states "It is considered by the people of the Lower Provinces to be a renovating crop, and is cometimes used as a green manure to enrich poor paddy land and land that has been infested with weeds" He adds 'It comes after one of the pulses or mustard, and is followed by a pulse, sometimes by shara onions When sum is grown on good soil, it is sometimes followed by potatoes. It is not necessary to prepare the land well for sunn Three or four

Cultivation of Sunn-Hemp.

CROTALARIA iuncea.

"Sometimes also paddy and sunn seeds CULTIVATION ploughings are sufficient " are sown together in the same field. When the plants have properly grown, the field is lightly ploughed and the ladder (a kind of harrow) is passed over it. The paddy plants mostly recover themselves, but the tender and jucy sunn is buried underground and dies. A few sunn

FIRRE.

Messrs Duthie and Fuller say of the North-West Provinces ing in a green crop of hemp is known to add considerably to the fertility of the surface soil by increasing its stock of nitrogen, and it is extraordinary that this is not a general practice with native cultivators" In Bombay tag (sunn) is not considered a good green manure for wheat

TREATMENT. 2112 Rombay. Bengal.

Tillage, Sowing, and Harvesting -As indicated above, the opinion prevails all over India that high cultivation is not necessary for sunn-hemp Of Kolaba (Bomb Gas, \$\lambda I, 97) it is said "The soil is roughly ploughed twice and the seed sown broadcast" In Bengal tibe soid

> N -W Provinces

broadcast It is necessary become bushy and coarse - 1. - - --

Madras.

o plots and watered twice oimbatore, by Nicholson.

allowed no manure, and the seed is sown broadcast on the ground, without any previous cultivation, at the season when the rains become what the natives call male,-that is to say, when they become heavy. After being sown the field

Mysore.

SEED per 2113

a y a outit of seed. Hoxburgh states that from eighty to a hundred pounds weight to the acre were used in het ma

CROTALARIA

Production and Cost of Sunn-Hemn

CULTIVATION
OF
FIBRE.
Left standing
for a month
Steeped at
once.

•

these are supposed to injure the colour of the fibre it allowed to too in live water of the tank. With regard to sunn hemp, the general rule may be almost safely laid down that in most regions, like Bengal, rapid submersion is preferred, and in dry regions, like Madras, stacking the crop and the colour of the

hand, states that the strongest opinions have been expressed in favour of first drying the plants before retting, the probability being, as indicated above, that both theories are correct, but applicable to different climatic

Fibre not removed from bank till required.

PRODUCE 2115 THE PRODUCE PER ACRE.—Is so variously stated that it is feared little reliance can be put on the figures Wisset says that it varies from 3 cwt.

In the Kolhapur District

ne average acre outfurn of experiments made at the flower, cut level with the

640 lbs per

ground, on the 4th Dasamba 2008 is had as he has accised the same day 325h, on the same day 325h, on the same day 325h, on the same day 35h and on the 21th and on the 21th average given by Wisset is thus most likely to be a fight one and the Kolhapur returns incorrect. Duthie and Fuller say of the North-West Provinces. "The average outturn is about 8 maintains for 450h) of clean

fibre to an acre, worth about R20,"

COST 2116 Juhle
ncludn the
en as
"The
n tre-

that in 1877 its price was as high as 6 seers (12lb) per rupee, whilst a 1th

CROTALARIA

шпсеа.

| Juncea. | |
|----------------------------|---|
| SEPARATION OF FIBRE, | acre The produce was sold by the cultivators to the Telinga Chitties or manufacturers by the thousand handfuls of the dried stems, tall plants fetched two rupees per thousand handfuls, and short plants a rupee and a half Butanother crop, he says, was sown in January Thus crop had to be watered and more labour spent upon it, but the produce was more valuable. An arrar, he says, required 476 bushels of seed, and its produce was |
| AREA. | sold for about £1 2x 10\d |
| 2117 | ARPA UNDER SUNN-HEMP —As may be inferred from what has been |
| N W. P. | stated regarding the ambiguity in the Indian literature of this subject, it is |
| 100 000 1101 014 | next to impossible to discover the extent of sunn-hemp cultivation Messrs Duthie and Fuller, from special returns furnished for their Field |
| l | and Garden Crops, state that in the North-West Provinces there are |
| } | about 40,000 acres under the crop But in the Land Administration |
| | Report for 1885-86 (page 163 A) it is stated that there were 108,728 acres |
| l | under "Sanas or Tel (sic)" But it is further remarked that the total area |
| 1 | under "fibres other than cotton and jute" was in that year only 123,403 |
| l | acres This last return would include hemp (proper) sanas and Hibiscus |
| 1 | cannabinus The Settlement Reports of Oudh show about 800 acres under sana: In Spons' Encyclopædia it is stated that there are 50,000 acres in the |
| | Panjab It is not known from what source that statement was derived, but |
| Paojab 50 000 acres. | it seems highly ir- |
| 30 000 00103 | than in the Nortl give |
| 1 | about 40,000 acre true |
| 1 | hemp plant, how nains |
| | as sunn hemp, it 6614 |
| Bombay 26 614 acres. | acres of brown hemp (Crotalarla juncea) grown in Bombay Full particulars regarding Madras cannot be obtained, but of the districts for |
| _ or acres. | which returns are available there were last year 175 acres under "sunn" |
| 1 | and 83 acres under "Bombay hemp" What this Bombay hemp may |
| ļ. | |
| | synonym for sunn-hemp. In 1884 85 there were 380 acres of 'Bombay |
| | |
| | "It can be |
| Į. | agents with |

under 'hem explains tha The former In Burma and Assam there are about 500 acres, in each province, of land entered as under "fibres other than cotton and jute" No returns are available for Bengal, but from personal observation the writer

duced, but it is not known to what extent the plant is cultivated. In the Central Provinces there were 24,800 acres under "False or San hemp"

would be disposed to think there must be as much in the Lower, as in the North-West Provinces It will thus be seen that the actual area under sunn-hemp cannot be absolutely determined, since the fibre is not included among the agricultural

products regarding which regular annual statistics are furnished it seems probable that there are at least 150,000 acres annually under the crop in India as a whole

SEPARATION OF THE FIERE

and in Mys

The question as to whether the plant should or should not be dried before being placed in the retting tanks having been discussed above. there remains to be given here a brief account of the various modes of retting or of peeling the fibre and of cleaning and boiling it after it has been separated from the stems In some localities the stems are recom-

Burma 500 acres. Bengai.

Travancore.

India 150 000 acres. SEPARATION 2118

| 604 | Dictionary of the Economic |
|---|---|
| CROTALA: | RIA Methods of separating sunn-Hemp Fibre |
| SEPARATION OF FIBRE. | mended to be buried in the mud at the murgin of the tanks, in others to be submerged in the water by being weighted. In others stagman water is condemned as destroying the colour and lustre of the fibre running streams being urged as preferable (Gisbon's account of the Bombay fibre). But practical and comparative experiments not having been performed in the other prowinces similar to those made at the begin- |
| Leaves stripped | nung of the present century by Roxburgh, in Bengal a definite opinion for or against the different methods pursued cannot be offered. After removal from the ground, the stems are ted in bundles (20 to 100 in eith), but the leaves are generally stripped off and left on the field When the stems are left until quite dry, the leaves either fall off naturally or are removed by the stems being beaten. It is a common practice to place the bundles of stems recet in 20 rs inches of water for 21 hours. |
| Length of submersion | so as to give the thicker and lower ends a longer submersion. But the length of time required for retting depends largely on the temperature |
| Stems p*aced erect in water then horizontal. | laid down lengthways in the water and are kept submerged by being weighted with earth. The time required for retting varies from three days |
| | mentation, while it whitens the fibre, injures its strength. Roxburgh, "Allthat seems necessary is to caution the plant, which they are apt to do the bark from the stalks easier, but clear water, well exposed to the aut |
| Deep water Running Water | beams, seem best suited for steeping in, because heat hastens maceration, consequently preserves the strength of the fibres, while the clean water |
| Damp Mud | the margins of tanks, referred to by some, is even more objectionable, 45 it seems impossible to adopt this mode of retting without serious loss to |
| Cleaning of Retted Fibre | the colour of the fibre Having discovere tained, the cultivator, of the stems in his |
| 1 | being partially washed, to dry for some hours This practice, while it is |

fibre has been separated and approximately cleaned In Salsette Island and other parts of Bombay, little or no retting is C. 2118

Cleaning Sunn-Hemp Fibre.

CROTALARIA iuncea.

employed "The plant while moist is peeled by the hand, and immediately dried in the open air or under cover, according to the state of the weather By peeling, the fibres are better kept in their natural state of arrangement, and give support and strength to each other, whereas, by the process of the Bengalese, they get so materially entangled that a great loss is always sustained. If they are restored to their natural situation by the heckle, there is a loss of nearly one half of the original quantity, which renders the heckled sunn of Bengal of a high price" The writer cannot discover any recent description of this Bombay process of separating the fibre without retting, but, as Roxburgh stated, the superior quality of Bombay over Bengal sunn hemp seems likely to be due to the fact that the fibre has not been subjected to strong fermentation

SEPARATION FIBRE. Not Retted.

Washing the fibre is very tedious, and a man rarely works for more than three hours at a time but is relieved by turns, he will clean is seers a day, which represents the fibre obtained from 5 or 6 maunds of stems Wages for cleaning.

Of Khandesh it is said a man earns RI for cleaning 40th of fibre Reference has incidentally been made to the period when the crop should be cut, and before proceeding to discuss the further treatment of the fibre it may be as well to add here that the period of cutting will ĭı 40-0-4 - 4- - -ri, "quired" A softer and more just as the flowers appear

Period of cutting. Soft fibre.

A few plants are always icit by the cultivators to mature seed for the next year's crop, and from Strong Coarse the stems of these they extract a strong, though coarse, fibre On the other hand, it seems to be the habit of some cultivators (the Wuniaras of Bombay) to allow the whole crop to ripen its seeds, this coarse fibre being all they desire, together with the seeds, which are valued as a food for buffaloo food

required for textile purpo eg, ropes and twine-it while hanging over the receives all the treatmer

2110 Breaking. Scutching

FURTHER CLEANING.

growers as 'breaking" cleaning is never used fibre that the Native gen separation from the ster quotes a report of a sample of sunn hemp experimented with at Hull of which it was stated that 'by using more care in the steeping and exposure, it will be fully equal to the Baltic" Such opinions are current in the reports of this fibre which appeared while the error existed of supposing it to be Indian grown hemp or Cannabis sativa It is impossible to avoid the impression that sunn hemp fell into disfavour when this error was exploded An expert in 1842, for example, says "Your hemp is very clean - a material point -but it wants more beating and dressing, and I think the natives have not proper implements to do it with You cannot improve in your mode of packing, it is decidedly superior to the Baltic I do not despair of seeing the produce of the Billic supplanted by that of India, as that defect appears to me solely to arise in the management of it it stands too long before it is pulled or cut, or is too much steeped or exposed, to get the fibre to separate from the stalk." Unfortunately the advances of scientific exploration told all such writers that the defects they complained of were due to the fact that

Said to be

CROTALARIA

Properties of Supp-Hemp

juncea.

the Baltic hemp it is to-day in the same position commercially as it was a hundred years ago While not hemp, it is a hemp substitute that deserves

a better position than it has as yet obtained PROPERTY AND STRENGTH OF SUNN HEVE

PROPERTY OF 2120

£35 e fon

of the fibre by growing and manufacturing it carefully, and Royle mentions a sample of heckled fibre sent to London by the Company that

this date, the whole interest in the fibre gradually died out, and the

EARLY RECORDS. 2121

First Exported.

· been exported was in the year Although numerous favourable reports appeared shortly after

| No | Names of the Plants- | Average weight each line broke with when dry | Average weight each incbroke with when act | Average weight |
|----|--|--|--|----------------|
| 4 | Sunn (Crotalaria juncea) cut before the plants were in blossom and steeped immediately | 112 | 128 | 4 |
| 5 | The same as No 4, but dried, or rather kept some time before they were steeped | 60 | 78 | 39 |
| 7 | Sunn cut when in full blossom, and steeped imme- diately No 6 kept drying for some time | 130 | 185 166 | 42 |
| 8 | Sunn, winter crop cut when the seeds were ripe and steeped immed ately The same as No S, but dried | 150 | 203 | 35 48 |
| 10 | Sunn, winter crop cut when the seeds were ripe, and steeped immediately | 160 | 209 | 31 |

| Propertie | s of Sunn | -Hem |
|-----------|-----------|------|

CROTALARIA iuncea

| No | Names of the Plants | Average weight each ine broke with when dry. | Average we ght each line broke | Average weight gained by wet ting the Incs |
|--------------|---------------------|--|-----------------------------------|--|
| 1 2 29 | Boshmena nivea) | 158 | 190 343 278 | 20 38 16 |

enorts.

but the new trade is from Bombay, not Bengal
Roxburgh tried the properties of sunn hemp in another way in order Roxburgh's

| | AVERAGE WEIGHT AT WHICH EACH SORT OF LINE BROKE | | | | | | |
|---|--|--------|--------|---|---------------------------|--------|--|
| NAMES OF THE PLANTS | When Fresh | | | Alter 11 | Alter 110 days maceration | | |
| | White | Tanned | Tarred | White | Tanned | Tarred | |
| English hemp, a piece of new tiller rope | 105 | | | Rotten, as was also the English log line | | | |
| Hemp from the Companys farm near Calcutta | 74 | 139 | 45 | | All rotten | ı | |
| Sunn hemp of the Bengalese | 68 | 69 | 60 | rotten | 51 | 65 | |
| Jute (Bungh: pát) | 68 | 69 | 61 | 40 | 42 | 60 | |

CROTOLARIA juncea.

Properties of Sunn-Hemp

PROPERTY OF THE FIBRE. Properties of Sunn-Heinp

Deterioration with age. According to these experiments sunn hemp stood the action of the macration better than did either of the samples of true hemp. It has further been shown that a cord 8 inches in size of best Petersburgh hemp broke with 14 tons, 8 cwt, 1 qr., wh le a similar rope of sunn only gave way with 15 tons, 7 cwt, 1 qr. Dr. Wight found that a rope of cord of a certain thickness broke with a weight of 224b, of cotton with 365b, of American also with 365b, of sunn hemp with 407b, of Calatropis gigantes with 535b, and one of Ambari (Hibisus canabinas) with 395b. Royle has shown the slight deterioration which sunn hemp undergoes, in the following statement: "A rope made in 1805 broke with a weight,"

Removal of Export Duty

sent century the bulk of the exports of raw hemp (1 sunn hemp) went from Bombay and not from Bengal, in spite of the efforts made a few pears before that date to create a Bengal trade. This nould seem to point to a superiority possessed by the Bombay as compared with the Bengal sunn hemp. It seems probable that had this fact been realised by the East India Company, their efforts to establish an Indian hemp industry would have been more successful than was the case with their attempts in Bengal.

RECENT EX

Injured by

In a Report on the Indian Fibres by Cross, Bevan, King, and Watt, recently published by E and F. Spon, the following passage occurs: "It is impossible to urge too strongly the claims of this much-neglected fibre—a fibre which seems to have suffered severely through the immense.

that so httle of the better qualities of sunn-hemp were procurable. Mr. Collyer and several other Brokers and Merchants stated that their only

Future Pros pects.

Chemical Properties of Sunn

CROTOLARIA

actual experiment not to be the case, then there must be something in the climate or soil of Madr-1s and of Bombay more favourable to sunn hemp than exists in Bengal

FIBRE

CHEMICAL AND MICROSCOPIC PECULIARITIES OF SUNN

10

2123

soda, it loses 8 3 per cent, and after an hour only 11 7 per cent Among Indian fibres it occupies the third of fourth place in point of amount of cellulose According to this classification Girardinia or Nilgrin nettle heads the list with 86 per cent, then Marsdema with 83 and after that Crotalaria juncea and Sida rhombifold equal, each with 80 oper cent of cellulose "The percentage yield of cellulose of the raw fibre is the most important criterion of its composition and value". It may be worth

Percentage

formanno Salatena Sal

Lurope, there still remains the practical fact that under the crude methods, adopted in India, they are valued as strong and durable fibres. It will be received with no small surprise by many that so humble a position thould be assigned to the fainted Popa fibre of Assam, and thus in concluding these remarks a possible explanation may be sought in the mode of hydrolys (or washing and bleaching) employed. The Popa was found to lot 62 per cent by being boiled in causic soda the res due being the cellulose upon which the low opinion of its properties is based. May it not

retains all its properties and under nitration attains a great weight (150.5) being in this respect third in the list of the Indian fibres experimented with by Messrs Cross and Bevan A writer in Sport Engelopatian says of sun heigh "Samples of the fibre, exposed for two hours to stead

2 R

| CROTOLAI juncea | |
|-------------------------------------|--|
| of the FIBRE | at 2 atmospheres, boiled in water for 3 hours, and again steamed for inst firs, 3750 Mindle (without the aid of a in point of durability under moisture and under causing aik in processes of washing and blench |
| icroscopic Form, 2121 | |
| re-examina- tion desira- ble, | menn, over measurements are in round numbers double |
| TRADE. 2125 | TRIDE IN SUNN HEVE. Little or nothing can be learned of a definite nature regarding the extent of the trade in this fibre. It is grown in every proxince, and nearly universally used by the people of India; but, as already stated, definite information in the even of the mother, and true same reason we are |
| Exports 2126 | Presently so an home or so a home along with a certain amount of the file of |

Imports and Uses of Sann-Hemp. CROTOLARIA
juncea

FIRER.
TRADE IM.

Hempen Goods. 2127

factured Hempen Goods other than cordage This continued to expand until, in 1870-71, when it was valued at R.16.143, of which Bengal had assigned to it R.153 330 The bulk of these exports went to the Stratis Settlements, Ceylon, and Mauritus From 1871-72, this trade began, however, to steadily decline, and in 1874-75 was valued at

Ropes and Cordage 2128

the bulk of the raw fibre so reported may be the Manilla hemp used up in the Indian rope factor as and of the hearner for true hemp 17641 cwt. of hemp 1

2 R 2

Imports. 2120

USES OF 2131

> Canvas. 2132

| 010 | Dictionary of the Economic |
|-------------------------------------|--|
| CROTOLA juncea | |
| CHEMISTRY of the FIBRE | at 2 atmospheres, boiled in water for 3 hours, and again steamed for a contract flav 2 50 Manil |
| MICROSCOPIC FORM 2124 | Mr. King, wild worked out a creation of the the fibre handles con He could |
| | ellmarke nm , end in <i>Spon</i> e with the plant mar tent in , min o ooi in |
| Re-examina- tion desira- bie. | es double strip of the sung samples o pared It volution |
| | maturity of seed, b by the process of drying before retting. |
| | TRADE IN SUNN HEMP |
| TRADE. 2125 | Lattle or nothing can be learned of a definite nature regarding the extent of the trade in this fibre. It is grown in every province, and nearly universally used by the people of India, but, as already stated, nearly universally used by the people of India, but, as already stated, nearly universally used by the people of India, but, as already stated, not only the confusion which exists as the confusion which exists a confusion which exists a confusion of the c |
| | conts to foreign |
| | |
| Exports | |
| 2126 | |
| | |
| Ì | Presumably sunn from or sunn hemp along with a certain amount of the blee of Historia cannablant—amphi or ambads 2126 |

| Imports and Uses of Sunn-Hemp. | | | CROTOLARIA juncea |
|--------------------------------|---|-----|----------------------|
| | · | 111 | FIBRE, THADE IN. |
| | | | |
| | | | |

Hempen Goods, 2127

Straus Settlements Ceylon, and Mauritius From 1871-72, this trade began, however, to steadily decline, and in 1874-75 was valued at

probable that this native industry may have been ruined by the remark-

Ropes and Cordage 2128

2128 Imports 2120

1 1

in the Ind an rope factor fabrics of true hemp 7 641 cut of hemp f

hemp from all Indian ports to other Indian ports, and these are returned as valued at R6 24,303, the trade having steadily increased since 1882-83, when it was valued at R96,683.

Uses TO which Sun Hear is rut—The chief purpose for which

USES TO WHICH SUNN HEAR IS PUT —The chief purpose for which this fibre is utilised at the present day is the manufacture of a coarse cloth (lat put) or criny a used chiefly for sacking A large amount of the fibre

USES OF 2131

ZI32

CROTALARIA iuncea

Uses of Supp-Hemo.

Paper 2133

paper is regularly made of this material, and large quantities are annually used up by the Indian paper-mills The paper made by the natives of Bombay is principally of su

is a common mixture

regarding sunn paper

paper, weighing 39 grs, made from "raw hbre, was b4lb, as compared with Bank of England note pulp, 47lb One batch was reported to

Hemp & Flax Substitute. 2134

2135

make a nice, clean, smooth paper, of good colour, but not taking ink well " For European purposes the fibre may be used as a substitute for hemp or for flax. Speaking of the special form of the fibre produced in

Travancore, Dr Royle says "The appearance of this fibre is totally different from any other which comes from India, as it is in the state Travancore Sunn as if prepared for spinning into thread, and must have been combed The fibres are brownish in colour, about 3 to 4 feet in length, clean and shining, not so fine as flax, but still resembling some of the coarser kinds. A very competent judge informed the author that it might be sold for the purposes of flax, or as a kind of flax, and was worth £35 a ton, so some specimens sent to Dundee were valued at the same sum, and it was said could be used for the same purposes as flax, though rather too dry." So, again, "This hemp, when prepared with

the patent liquid, became soft, white, and so fine when heckled as to bear the closest comparison with flax at \$80 per ton It is better than any Russian flax for fine spinning Bombay hemp, rough and dark, and This article, being similarly prepared, was valued at £20 per ton considered equal in value with the Madras hemp Sunn stalks (after removal of the fibre) are used chiefly as fire-

STALKS 2136 Torches 2137 Matches

But of the Kolaba district, Bombay, it is stated "Hemp torches and stalks with hes round. into about

2138 C P. Fibre. 2139 Bengal 2140

e obtained tter being the fibre most probably of the form known as Crotalaria tenufolia) as superior to the ordinary sunn hemp We possess so little definite knowtedge regarding the cultivated forms of the sunn plant that it can only be

Bombay 2141 Madras 2142 N W P.

Were such specimens to be accompanied with samples of its mination -. & . annh. brang pre-

2143 mmetica: Process 2144 Deferred Process 2145

s where eible to the natives to adopt the process of preparation of the fibre which was

s of Crotalaria ighly probable

s of ret-

as well to

| · | |
|--|---------------------------|
| | rALARIA etusa |
| Food and Fodder —It has already been incidentally remarked that in some parts of India the seeds of this plant are collected and given | FODDER |
| to cattle. Roxburgh says "This plant—and it is the only one—is also cultivated by the natives of some parts of the Northern Circars to feed their milch-cows with during the dry season. I have found that it is | Seeds 2146 |
| | MEDICINE Seeds 2147 |
| Crotalaria laburnifolia, Linn , Fl. Br Ind , II , 84 | 2148 |
| A shrubby plant met with in the Western Peninsula, particularly in the South Concan Properties similar to those of the neet species. It is known in Hindustan as mina, the pedac-galli gista of Telegu Sir Walter Elhot gives it the further Telegu name of Clair gistgichela, and the plant is often seen in gardens on account of its flowering throughout the year, | |
| C. Leschenaulti, DC, Fl Br Ind., II, 76 | 2149 |
| ns of the ant used zell and | Satara Paper 2150 |
| C. medicaginea, Lank, Fl Br Ind, II, 81 Vern—Gulabi, Ps | 2151 |
| A diffuse perennial abundant in the tropical regions of India from Kashmir to Burma, ascending to 6 000 feet in altitude | |
| Medicine —This plant is officinal in the Panjab being sold in the bazars under the name of gulabi (Biden Powell, Po Pr. 343) | MEDICINE 2152 |
| C. prostrata, Roxb , Fl Br Ind , II , 67 | 2153 |
| A slender creeping weed, common on the drier plains of India ascending to 6,000 feet. | |
| This is known to the state of t | 2154 |

known in Bengal as
Roxburgh says this

C. retusa, Linn, Fl Br Ind, II, 75

2155

form of sunn hemp may be passed of

by them it is used

FIBRE 2156

instructive to possess definite information as to the comparative value and property of this fibre with the true sunn-hemp. In Bengal it is

ROTALARIA verrucosa

Sunn Hemp yielding Plants

~ mbay " with 800)

2157 FIBRE Crotalaria sericea, Retz , Fl Br Ind , II , 75.

Kurzangues to ti t pa t engal and Roxburgh but Dr Udoy Chand the Bengali name of

2158

C. striata, DC., Fl Br Ind, II, 84

autough his more is sometimes prepared

2150 A low growing shrub, with robust, sulcate, thinly silky branches and large yellow flowers striped with red Fairly abundant throughout the FIBRE

warmer parts of India 2160 The Rev A Campbell states that this is cultivated by the Santals in

Chutia Nagpur on account mainly of its fibre The plant is known to them as Son thunka and to the Hindustani speaking people of that region as Son, San He adds that the root or a small portion of the stem is tied to the wrists and neck of a person suffering from dropsy Roxburgh remarks this is known to the Telegu speaking people of Madras as Mungi

Charms 2161 2162

C. tenuifolia, Roxb., Fl Ind, Fd CBC, 546 This has been reduced by most botanists to a synonym for C. juncea,

2163

Linn, which see C tetragona, Roxb , Fl. Br. Ind , II , 78

A stiff very handsome shrub, often 68 feet in he ght, met with on the lower Himalaya (up to 3 500 feet in altitude) from Kumaon to Assam and Kurz alludes to this plant and gives it the Burmese name of Chu Yain The shrub flo vers in October and November Mr Gamble in his List of the Trees and Shrubs &c of the Darjeeling District, says it is known by the Paharia names of Kengens, kotulkasub and to the Lepchas as Suhutung rung

C, verrucosa, Linn, Fl Br Ind II, 77, Wight, Ic, 1 200 Vern kıllub

Ainsl spec e according to Trimen

LAL it chould night a a feet in height ding rma

America MEDICINE

Juice

2161

Medicine -Ainsle says "I have given this a place here, on the and he leaves is supin I idier er but not

growing xiemall),

pical

2164

| The Croton | CROTON Joufra, |
|---|---------------------------|
| | |
| CROTON, Linn, Gen Pl, III, 293 | 2165 |
| The generic name hoorow (a tick) was given by Linnzus to this assem- blage of plants in allusion to the shape of the seed. The chief medicinal | |
| | |
| A . W | l |
| • | |
| Croton argyratus, Bl , Fl Br Ind , V., 383, Eurhorbiaceze | 2166 |
| Syn — C picolor, Roch Vern — Chonoo, Burm, Jalib da, And References — Roch, Fl. Ind., Ed. C.B.C., 687 Gamble, Man Timb, 359 Kurs, For Fl. Burm, II, 372 | |
| Habitat — A moderate sized or small evergreen tree of Martaban, Tenasserim, and the Andaman Islands Structure of the Wood — Hard, yellow, close and even-grained, seasons | TIMBER. |
| well It is worthy of notice and weighs 46 to 48% per cubic foot C. aromaticus, Linn, Fl Br Ind, V, 388 | 2167 |
| Syn —C Lacciferus, Linn , Aleubites Laccifera, Willd | 2168 |
| Vern — Welkephityu, Simo, Vid pune, Tam (names used in Ceylon for C aromaticus, the form C. laccifera being Aephityd in Simo) References — Briddone, Forsier = Man, 201, Whyth, Ic, t 19 15, Liubon, U. Pl. Bomb, 121, Trunen, Cat Ceylon Pl. 81; Gamble, Man Tumb, 355, O Shanghenesy, Beng Dup, 553 | |
| Habitat —An aromatic shrub or small tree, met with in the Dekhan from the Concan southward Medicine —Said to be used medicinally Thwaites remarks that the lac obtained from C. lacuferus "is employed by the Singulese for medi- | MEDIÇINE |
| cinal purposes." | 2169 Lac |
| C. caudatus, Gusel, Fl Br Ind, V, 388 | 2170 |
| Syn — C DRUPACRUS, Rorb Vern — Nan bhantir Bryo Talchabrit, Lepchi, Busta Uriya References — Rorb, Fi Int Bd CBC 688 Vaget, Hort Sub Cal, 159, Kurs, For Fi Burm II, 375 Gamble, Wan Timb 358-359 and XVI | |
| Habitat.—A large straggling, more or less scandent shrub of Bengal Assim, Burmi, and South India, found chiefly on the banks of streams Roxburgh states that it is a nat ve in the country about Dacca, and flowers in March, the seeds ripening in September | |
| Medicine—Mr Home Conservator of Forests, writes, the leaves are applied as a positive to sprains Structure of the Wood ~White or yellowish-white, hard, close grained Home says it is used for fuel | Leaves 2172 TIMBER. |
| C. Eluteria, Bennett, affords Cascarilla Bark, an imported drug | 2173 |
| C. Joufra, Rosb , I'l Br Ind , V , 387 | 2175 |

Vern -According to Roxburgh Johfra is in Sylhet the name of this small

tree or shrub

| 310 | . Dictionary of the Economic |
|--|--|
| CROTO oblongifol | N The Oblong-leaved Croton. |
| | References.—Kurs For Fl Barm, 11, 373; Gamble, Man. Timb, 353, Medical Top Ajmir, 140, Voigt, Hort Sub Cal, 150 |
| | Habitat —A small shrub very similar to C. oblongifolius, but with smaller more accuminate leaves, met with in the Eastern Pennsula—Sylhet, Sibsagar, Pegu, Upper Burma, &c. Flowering time March and April |
| MEDICINE 2176 | Medicine.—Like most other species, the leaves, seeds, and root of this species are occasionally spoken of as used medicinally. |
| 2177 | Croton lacciferus, Linn, a form reduced to C. aromaticus, Linn, by the Flora of British India. |
| 2178 | C. malabaricus, Beddome; Fl. Br. Ind, V, 386. References — Beddome, Ie, t 171, & Forester's Man., 204; Gamble, Man, Timb, 359, Lubboa, U. Pl. Bomb, 121. |
| MEDICINE. 2179 | Habitat.—A small tree common in the western forests, ascending to 4,000 feet in alittude, Malabar, &c. Medicine.—Said to be used by the natives of India for medicinal purposes. |
| 2180 | C. oblongifolius, Roxb; Fl. Br. Ind, V, 386. Vern. Chucks, Patha (according to Irvino), Bara gach, Beno (according to Irvino), Bara gach, Novar, Karth, Sate, |
| | References — Post Strong Congress Congr |
| | Habitat.—A small tree found in the sub-Himálayan tract from Oudh eastward and in South India, the Deccan Peninsula, Burma, and Ceylon Robburgh remarks that it is common in the forests about Calcuta, |
| OIL 2181 Medicine | leaves, and fruit are used are purgative; Dr Irvine |
| Seed 2182 Fruit 2183 Root-bark 2184 | |
| Root. 2185 | |
| | "bark and root as a purga tive and as an alterative in dysenter?" It would appear that the early writers on Hindu Matern Medica do not allude to this plant, and many of its vernacular names would point to |

| The Purging Croton | CROTON Tiglium. |
|---|--------------------|
| the properties having been but recently understood. There is no good Hindi nor a Bengali name for the plant. It is not referred to by U.O. Duttor by Ainsle, and while Roxburgh describes it he makes no mention of its medi | |
| by European writers | ı |
| Structure of the Wood.—Whitish to yellow, close-grained, moderately hard and heavy, hable to crack in seasoning. | TIMBER. 2186 |
| Domestic Uses The plant is frequently employed for fences | DOMESTIC. 2187 |
| Croton polyandrus, Roxb, see under Baliospermum montanum, Muell, Vol. I, B. 28 | 2188 |
| Hooker, in the Flora of British India, V., 461, reduces this to B axillare, Blume Consult also O'Shaughnessy's Bengal Dispens, 555. U C Dutt's Mat Med of the Hindia, 202, and Dymock's Materia Medica, West Ind., 2nd El., 688, the last work has appeared since the issue of the sty volume of this publication | |
| C. reticulatus, Heyne, Fl Br Ind, V, 386 | 2189 |
| Syn —C HYPOLEUCUS, Dals , C ZEYLANICUS, Muell -Arg Vern —Pándhars or pandharssala, MAR | |
| References — Dymock, Mat Med West Ind, 2nd Ed 694, S Arjun, Bomb Drugs, 122 Thwaites, En Ceyl Pl, 276, Dals and Gibs, Bomb Fl, 231, Libban, U Pl Bomb, 121 | |
| Habitat — A shrub with slender branches, met with in the Dekhan Pen insula from the Koncan southwards, distributed to Ceylon Medicine—Sakharam Arjun eays the bark is "used as a bitter and stomachic" | MEDICINE Bark |
| C. sebiferum, Linn, and Sapum sebiferum, Roxb, are synonyms for Stillingia sebifera, the Chinese Tallow Tree This is now cultivated to some extent in India, and, according to Roxburgh, is known in Bengal as Momelina | 2191 2191 |
| C. Tiglium, Linn, Fl Br Ind, V, 393. The Purging Croton | 2192 |
| Syn —C PAVANA (or PARANA) Hamilton | |

References. - Roth Fl Ind . Ed CBC 688 Voigt, Hort Sub Cal ,

Vern - Jayap ila kanakaphala (in Ainslie dunti, bija) Sans , Jaypal

CROTON

The Oblong-leaved Croton. oblongifolius. References. - Kurs, For. Fl Burm, II, 373; Gamble, Man. Timb, 358; Medical Top Ajmir, 140, Voigt, Hort. Sub. Cal, 156. Habitat,-A small shrub very similar to C. oblongifolius, but with smaller more accuminate leaves, met with in the Eastern Peninsula-Sylhet, Sibsagar, Pegu, Upper Burma, &c. Flowering time March and April Medicine.-Like most other species, the leaves, seeds, and root of this MEDICINE species are occasionally spoken of as used medicinally. 2176 Croton lacciferus, Linn, a form reduced to C. aromaticus, Linn, 2177 by the Flora of British India. C. malabaricus, Beddome: Fl. Br. Ind. V., 386. 2178 References.—Beddome, Ic., t. 171, & Forester's Man., 204; Gamble, Man., Timb., 359, Lisboa, U. Pl. Bomb., 121. Habitat.-A small tree common in the western forests, ascending to '4,000 feet in altitude; Malabar, &c. Medicine.-Said to be used by the natives of India for medicinal pur-MEDICINE. 2170 poses. 2180 C. oblongifolius, Roxb.; Fl. Br. Ind . V. 386. Vein.— Chueka, Paira (according to Irvine); Bara gack, Bevo (according to Brandis = large plant), Aryanna, Oton; Add, Nezal; Kutt, Aonya, Anit, Johrs, Sort, Start, Louis, David, Start, Start, Louis, Mal., Burma parabap, Ass; Blutan kasan, Tei Conser, Gola, Conser, Boux, Canakagard, Max., Talyan, Repth, Burn. References - Paul El 1 2 El CRC de U . U. C & Calc, Habitat.-A small tree found in the sub-Himálayan tract from Oudh eastward and in South India, the Deccan Peninsula, Burma, and Ceylon Roxburgh remarks that it is common in the forests about Calcutta, OIL. leaves, and fruit are used 2181 are purgative; Dr. Irvine MEDICINE ive Seed 2182 ble cdFruit. 2183 nd Root-bark nic 2184 150 to Root. ~ 2185 "bark and root as a purgative and as an alterative in dy entery."

It would appear that the early writers on Hindu Materia Medica do not allude to this plant, and many of its vernacular names would point to

| The Purging Croton, | CROTON Tiglium. |
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| the properties having been but recently understood. There is no good | |
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| | TIMBER. 2186 DOMESTIC. |
| Croton polyandrus, Roxb, see under Baliospermum montanum, Muell, | 2187 2188 |
| Hooker, in the Flora of British India, V, 461, reduces this to B | |
| | |
| C. reticulatus, Hegne, Fl Br Ind , V , 386 | 2189 |
| Syn — C Hypoleucus, Dals , C zeylanicus, Muell - Arg Vern — Pandhari or pandharisala Mak | |
| References — Dymock Mat Med West Ind, 2nd Ed, 684, S Aryun, Homb Drugs, 122 Thwaites, En Ceyl Pl, 276, Dals and Gibs, Homb Fl, 231, Lisban, U Pl Bomb, 121 | |
| distributed to Ceylon | |
| ys the bark is "used as a bitter and stomachic" | MEDICINE. Bark |
| C sebiferum, Linn, and Sapium sebiferum, Roxb, are synonyms for Stillingia sebifera, the Chinese Tallow Tree This is now cultivated to some extent in India, and, according to Roxburgh, is known in Bengal as Momelinia | 2191 2191 |
| C. Tiglium, Linn, Il Br Ind, V, 393 The Purging Croton | 2192 |
| Syn -C PAVANA (or PARANA), Hamilton | |
| Vern - Jayop la kanakaphdla (in Ainslie dunti bija) Sans , Jaspdl | |
| | |
| y A no w datun Aran Bed angire khatas, habbe khatas, Pers (according to Moodleen Sheriff) | |
| Ref P L El 1 2 Fd CRC 198 Lo of Host Sub Cal | |

| 010 | Dictionary of the Economic |
|---|---|
| CROTON Tiglium. | The Purging Croton |
| | 4 D. 17197 4 0 51 1 5-11 1 7 17 C |
| | |
| | and Arboretum, 67, Symmonds, Trop Agrs, 424 White A could trop for to an fact by mat the order of the atom |
| 0IL Nuts. 2193 | |
| | 1 / 1 1 nonnfav |
| Eombay 2194 Cochin 2195 Chinese, 2196 European Expressed 2197 | nuts are exported chiefly from Bombay and Cochin (often being also Chinese re exports), and the oil is expressed in England Dr Dymock informs the writer that the oil is expressed at the Government Medical Store Depôt at Bombay. It costs about 12 annas a B, whereas in E825, the same oil was sold for about 10 shillings an ounce in England The plant used to be grown for the purpose of its seeds at Heara, but the supply is now imported from China suf Singapore The nuts self for RS; per maund of 41B. It is necessary to be cautious in handling the nuts or the oil, owing to |
| 2198 | their bistering the skin. The oil is frequently used for colds in the chest as an external application, causing a severe blister. It is much resorted to it is a domestic cure but is not recommended by the profess on 6. The drastic principle of the oil has not yet been solated, it appears to exist not only in the seeds but also in the leaves and wood. Pro- |
| MEDICINE Seeds, 2109 Oil 2200 | fessor Warden, Calcutt 1) Mediant.—The sprins are used as a powerful drastic purgative, and the out is regarded as a valuable medicine. In overdoses they act as an acro narcotic poison. When externally applied the oil is a stimulant rubefacient and counterinitant Croton oil is said to posses powerful hydragogue cathartic properties. It is also useful in dropsy, obstinate |
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| 2201 | |
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fever, constitution, intestinal worms, enlargements of the above viscera, ascites, masarca, &c."

CROTON

Tiglium.

| D F: ' / 47 A 4 Pan wal - 1940 - toni- | MEDICINE. |
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| | 2202 |
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| | |
| opinions of a few Indian medical officers who re-made known the properties of this drug at about the beginning of the present century or the close of the last. Practically all subsequent writers have but slightly altered the | } |
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| The transfer of the second | 1 |
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| biting the oil at first in larger doses than one or two minims, to adults, | |
| | |
| the oil highly useful as an emmenagogue "Rumphius informs us that the Root of the plant is supposed, by the inhabitants of Amboy nat, to be a useful drastic purgative, in cases of dropsy, given rasped in doses of a few grains, or as much as can be held | Root 2201 |
| between the thumb and finger?" "Rheede, who speaks of the plant under the name eddin wanzer, say, that the Prayes rubbed and soaked in water also are purgative, and when dired and powdered are a good external to the property of the powders of the property of the propert | regies |
| • | |
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their uses as a drastic purgative the seeds are applied in the form of limment to the penis in cases of impotence and have a high reputation in this disease amongst the natives" (Lat. Muhomed, 1st Class, Hospit. Assit,

C. 2207

2207

| 019 | Dictionary of the Economic |
|---|--|
| CROTON Tiglium. | The Purging Croton |
| | 4. D. 171 YI e p P 1 c 1 21 - 4.71 C |
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| | • • |
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| | Habitat — A small tree (15 to 20 feet high) met with under cultivation throughout the greater part of India, probably indigenous or only natura- lised in Eastern Bengal and Assam and southward to Malacca, Burma, |
| 01L Nuts. 2193 | and Ceylon |
| | Lambera es de la junto |
| Bombay 2194 Cochin | |
| 2195 Chinese. 2196 European Expressed 2197 | Onits set exportes (meny from bombay and contin joine of the Chinese re exports), and the oil is expressed in England Dr Dymock informs the writer that the oil is expressed at the Government Medical Store Depot at Bombay It cost about 12 annas a B, whereas 1825, the same oil was sold for about 10 shillings an ounce in England e of its seeds at Hevra, but 45 Singapore The nuts still |
| 2198 | the nuts or the oil, owing to the nuts or the oil, owing to mainly used for colds in the analysis of the state of the oil has not yet been solved, it appears of the oil has not yet been solved, it appears of the oil has not yet been solved in appears of the oil has not yet been solved in appears. |
| | to exist not only in the seeds but also in the leaves and most |
| MEDICINE Seeds. 2100 Oil 2200 | Medicine.—The SFEDS are used as a powerful drastic purgative, the oil is regarded as a valuable medicine. In overdoses they act as an acro narcotic poison. When externally applied the oil is a simulant property of the oil is a simulant property of the oil is a simulant property. |
| 2200 | rubelacient and counter-irritant. Croton on is said to prospect by dragogue cathartic properties it is also useful in drops; obstinate constipation, and apople of the oil, the nuts boiled (as at the present day) to |
| | and according to many cotyledons (or seed leav |
| 2201 | |
| | |
| | |
| | C. 2201 |

| The Purging Croton | CROTON Tiglium |
|--|----------------------------------|
| a s s s s s s s s s s s s s s s s s s s | MEDICINE Grana Tiglia 2202 |
| tion, they have been long banished from modern practice. For the same | Į. |
| · · · · · · · · · · · · · · · · · · · | 2203 |
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| | |
| biting the oil at first in larger doses than one or two minims to adults, |) |
| •• | |
| the on highly useful as an emmenagoue "Rumphius informs us that the root of the plant is supposed, by the inhabitants of Amboyna to be a useful drastic purgative, in cases of dropsy, given rasped in doses of a few grains or as much as can be held but some the child of the plant under who speaks of the plant under | Root 2201 |
| s rubbed and soaked in water owdered are a good external | Leaves 2205 |
| , | |
| tion and drops along are the along amounts of the along ship Chunder | |
| C. 2207 | , |

CROZOPHORA The Indian Turnsole olicata. MEDICINE. Many Distensiry, Hoshangabal, Central Provinces) "The seeds, hilf roasted over a lamp or candle flame, and the smoke inhaled through the 2208 CIE, Madras) "1 tard oil or olive oil to (Doy at Chunder Sho rubefacient" (D Pice is frequently applied (Surgeon-Major Robb, Casal Surgeon, Ahmed abad) Croton tinctorium, Turnsol, see Crozophora (Chrozophora) tinctoria, 2200 A Tuss. Crown Bark, see Cinchona Condaminea, Huml., RUBIACEE C., 1120. CROZOPHORA, A. Just.: Gen Pl. III., 505 2210 error in the spelling of the name hen arranging the material for effect of placing it in the wrong rom you'w the word should of course he Chrozophora as corrected by Necker. Crozophora (Chrozophora) plicata, A. Juss.; Fl. Br. Inl., V., 2211 400, ELPHORBIACE E. Syn -C Rottleri, A Fuss; C. Plicatus, Vall; C Rottleri, Geisel, C Tictorius, Wall, Burm, C Plicatum, Walld in Roxb , Fl Ind) Vern .- Shaders, seba's sonballs, HIND , SIND and Okharada, GLZ., Khidiokra, Beng, Pango nari, Santali, Sunjararin, Sans, Pit kinda, nilikarin, nilak rai, Ps; Acal bots, Tann, Gurugu cheltu, linga munjam, Tel. References — Forth, Fl. Ind. El. CBC, 687, Throates, En. Cerlon Fl. 443, Dals & C. Fl. Andrica 66, Chutia Naghur, 19 Is Ind , and hi is is the Indian Turnsol-· Wilson, Brown, Piddington, and others have imagined the plant to be the sun fower, and still turther to increase the confus on, they have turned the old Greek name Chrozophora tinctoria, L (hterpo-tor pixpor) into the modern 2212 Heliotrope, and explained the various lad an names of Croz plicata by Helitropium (Tiardium), Indicum, Lin II, Lee Aine, p 281" This mistale has been repeated by O'Shaughnessy, who says that Chrozophora tinctorium, the Turnsol (Turnsole) is the Iln lietporer HIKPOY of Dioscorides." Habitat.-There are two well marked forms of this plant-(1) a small procumbent annual, found in sandy damp situations, such as on the banks of nial bus il e Flor tie wan Burma. dit on ch phora to

The Turnsole

CROZOPHORA tinctoria.

Madras, and Burma, and is of no interest from an economic point of view, since the properties described below are alone applicable to the erect plant, and to Chrozophora tinctoria The confusion alluded to by Sir Walter Elliot may be accounted for by the fact that the crumpled leaves of the procumbent plant are remarkably Borag naceous in their

> on to dye -" It

2213

sules. becomes nine after exposure to the open air, they, no doubt, contain colouring matter, which might be turned to good account in the arts" O Shaughnessy, who wrote 20 years later still, says-"The summits of ar a for the prepar t on of the d a nomed 4 the plant and the fe

species

Fibre -The Santals prepare a strong and useful rope fibre from the bank, but it is difficult to separate (Campbell)

Medicine —The ASHES of the root are given to children in coughs The LEAVES are considered depurative, and are officinal under the name nilkhanthi The SEEDS are used as a purgative The Revd A Camp bell states that the Santals mix the ROOT with that of Carissa Carandas for blistering purposes 'This is a plant which Dr F Hamilton (MSS) had brought to him in Behar, as one of those which was supposed to have virtues in leprous affections, the dry plant is made into decoction, to which is added a little mustard" (Ainsie)

Timber,-The stems of both this and the next species are regularly collected as fuel Dr Stewart says of C functoria "It is cut and carried into the city of Lahore to be used as fuel in ovens" This fact may be to are both peren-

te annuals " The nd to be most pro-

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met with in rice helds of Bengal, as distinct from the bushy perennial found in Chutia Nagpur and Upper India

Crozophora tinctoria, A Juss , Il Br. Ind , V , 408 TURNSOLE Eng

Vern -Shalett, sonball: subal: HIND & SIND Tappal buti, nilan kukronda, Pa , hap-o-chist in the Hari rud Valley, Afghanistan (Aitchison) Link tak

DYE

MEDICINE. Ashes 2215 Leaves. 2216 Seeds. 2217 Root

FIRRE

2214

2218 Dry Plant. 2210 TIMBÉR Fuel. 2220

2221

2222

CR020PHORA

The Turnsole.

tinctoria.

less woolly leaves than either C. plicata (procumbent form) or C. tincto-

DYE Rive

ria, but is covered with a granular mealy substance Dye -Although it seems probable that most Indian authors who

allude to having observed the fruits of Chrozophora yielding a purplish dye, speak of the erect perennial form of C, plicata, still C, tinctoria doubtless affords the same due in this country as it is cultivated for in India of the dve principle

be of some practical util tv. industry in this die-stuff, opean uses and methods of

The researches of Dr Joly (Ann de Chim et de Phys, VI preparation III) have shown that the dye principle occurs in all parts of the plant and not in of the

Yellow. 2223

cles.

blue to from 50° to 60°, that liquid assumes a rather deep violet blue colouration, and deposits, on being evaporated, a beautiful azure-blue resinous

Green 2224 Litmus on Rags 2225

without the aid of mordants, a violet-red upon wool, silk, and cotton tissues, and that this colour may be rendered fast by steaming and the

Powder. 2226

1 meyer, turn the colour simultaneous a 383). "This dye is more blue" ie plants-little herbs called Turnes 13 _ han they yield about mes purple by

Sacking Impregnated

exported to fromand, and is prepared for exportation by soaking coarse linen rags or sacking with it, the rags being previously washed clean After sorking they are allowed to dry, and are exposed to the influence of ammonia by being suspended over heaps of stable manure then packed in sacks and are ready for shipping to Holland" (Treasury of Rolany) "The red colour of the outer crusts of some kinds of Dutch cheese is due to the presence of some lactic and butyric acids in that No good substitute for this 'litmus on rags' for the list named purpose has as yet ever been found A sum of £10 000 is annutants of Grand Gallar-

would take to be any aing after having been en used to rub cheese t the old rags take up

It is chiefly

15

2227

dily than new ones (Crookes) at ade a coloreing principle

TRADE. 2228

reason to suspect that a very extensive trade might be done in it plant is wild everywhere on the waste lands of India, luxuriating on both dry sandy tracts and river margins, at might be grown at a small cost anywhere, and the subject thus seems well worths of attention, as there are many purposes to which it might be put in India. The writer

| | PTERONIA bescens. |
|--|--|
| can discover no evidence of its ever having been utilised by the natives of India but it is a remarkable coincidence that in Bengal, at least, it bears a name (okra) now given to several introduced American plants of the the | TURNSOLE- DYE. |
| 5 5 5 | 2229 |
| • | (|
| | |
| grown as hedges around their man, o news, thus shouting a possible exitatevenue, while serving a purpose for which they are eminently suited, since to herbivorous animal his as yet been observed to browse either on Jatropha glandulifera or Chrozophora tinetoria. | |
| CRUSTACEA. | 2231 |
| AND AND COME AND | F00D Crabs 2232 Prawn 2233 Lobsters. 2234 Cray fish. 2235 Shrimps 2236 |
| h at a manu — at — g | |
| | 2237 |
| | medicine. 2238 |
| animal food " | 1 |
| CRYPTERONIA, Bl., Gen Pl., I, 782 | 2239 |

[Man Timb 199, Lythricer Crypteronia pubescens, Blume, Fl Br Ind, II, 574, Gamble,

Vern -Ananbo, Burm

Habitet - A tree on fee in he obs m 1

for luci.

C. 2241

TIMBER. 2211

| | • |
|----------------------------|---|
| CRYPTOM japonio | |
| | CRYPTOCARYA, R. Br; Gen Pl, III, 150 Several species afford valuable timber. |
| 2242 | Cryptocarya amygdalina, Nees; Fl Br Ind, V, 118; LAURINEE Vern — Patmare, Neull; Kaledoo, Lercha Habitat — A tree with spreading brunches, found from Nepal castwards |
| TIMBER. 2243 | to the Khaga hills and south to the Andaman idands Structure of the Wood,—Strong and useful C. ferrea, Bl.; Fl Br Ind, V, 119 |
| 2244 2245 | [Lisbea, U Pl. Bomb, 113. C. Wightiana, Thwiles, Fl. Br Ind, V, 120; Wight, Ic, t 1829, Vern—Golu mora, Sing |
| TIMBER. 2246 | Habitat —A tall tree, frequent in the Dekhan peninsula from Kanara southwards to Ceylon Structure of the Wood.—Strong and durable, useful for building purposes |
| | CRYPTOLEPIS, R Br ; Gen Pl , II , 740 |
| 2247 | Cryptolepis Buchanani, R & S, Fl Br. Int., IV, 5, Wight. |
| | uruga pilodige, a livi- it is called Mid stildike |
| | References — Rosb. 7 |
| | India from Kashmr seending the Himi- |
| FIBRE 2248 MEDICINE. | Vizinnagram make |
| 2219 | |
| 2250 | n milk) sap, it miy be presumed the properties are out the Santals rest on the "Doctrine of Signatures." |
| | CRYPTOMERIA, Don; Gen Pl, III., 428. |
| 2251 | Cryptomeria japonica, Don, Confere Habitat - A handsome tree, native of China and Japan, by largely cultivated throughout the districts of Darjeching, Simila, and occasionally in other half stations |
| | C. 2251 |

Canntchouc-producing trees. Structure of the Wood -White, soft, with a brown, often almost black, heart-wood; very uniform, with narrow bands of darker and firmer tissue at the edge of each annual ring. CRYPTOSTEGIA, R. Br.; Gen. Pl, II, 742 ASCLEPIADACEÆ

CRYPTOSTEGIA grandiflora. TIMBER.

2252

2253

Cryptostegia grandiflora, R Br.; Fl Br. Ind, Vol. IV., 6;

Vern -Vilarjuti vakundi, MAR (according to Dr. Sakharam Arjun in a letter to the author), Palay, Man (according to Sir George Birdwood). Habitat -An extensive climber, cultivated in various parts of India,

supposed to be a native of Africa or Madagascar.

CAOUTCH-2254

Caoutchouc .- Dalzell and Gibson (Bomb Fl Sp , 55) say "the whole h is like India-rubber, ng made to extend the

lombay (See Agri -Hort. Hyderabad, Sind, 1882, A sample of the Sind

S grown in the Botanic

much blackened by oxidation; a very small portion only had retained the light colour of Ceara rubber. The whole had become agglomerated by the adhesiveness of the little separate masses of which the sample was composed

"The sample was carefully torn to pieces and examined, a separate examination being made of the lighter and darker portions The only difference found is in the much larger quantity of moisture met with in the lighter portions

"It might have been possible to have given some assurance on this point if the time was stated how long this sample had been collected. In its present condition it is hardly equal to Ceara rubber from Brazil, although

conpartly

2255

, and disting, the lighter portions fost 150 per cent, the darker portions lost only 2 9 per cent The amount of ash obtained from the lighter portions was before washing 4 3 per cent, after washing 2 7 per cent The darker portions yielded before washing 42 per cent, after

vulcanized, as compared with the darker portions, but in this respect no difference could be perceived "

The Conservator of Forests, Northern Circle, Bombay Presidency, wrote on the 16th January 1838, that Cryptostegia grandiflora "is cultivated in gardens in nearly every station in India, and can be easily propagated The cost of collecting the sap would be so great that a plantation is not 2256

cucumis. The Cucumia or Melon. likely to be commercially successful. The plant grows wild in the Western Ghats " Crystal Rock, see Camelian, C. 616. CTENOLEPIS, Hook, f : Gen. Pl , I , 832. Ctenolepis Garcini, Naud., Fl. Br. Ind , II , 630 ; Cucurbitaces. 2257 Vern. - Gud: murals, Tel References -Roxb , Fl Ind , Ed C B C , 703; Dals & Gibs, Bomb Fl , 99. Atkinson, Econ Prod . V . b 12 Habitat -An annual climber, met with in Bundelkhand and the Dekhan. Grows on rubbish heaps and hedgerows Medicine .- Atkinson says the fruit, seeds, and roots are used in medi-MEDICINE. 2258 cine Cubeba officinalis, Mig., see Piper Cubeba, Linn. : PIPERACEE Cubebs, see Piper. CUCUMIS, Linn , Gen Pl. I. 826. 2250 A man cofel -L -- L, L History -Much confusion still exists regarding the Indian so-called HISTORY wild and cultivated species and varieties Roxburgh was the first author 2260 who systematically examined and described the Indian forms In his Flora Indica he gives the distinctive characters of what he regards as nine species, two of which, by all subsequent botanists, have been removed to other genera, and the remaining seven reduced to three species. De Candolle, however (Orig Cult Pl., p 250), seems to be of opinion that they represent but two species—C Melo, Linn (embracing all the wild and cultivated Indian, African, and American forms of the Melon) and C. sativus, Line (the Cucumber) Referring to Roxburgh's nine species, Ainslie says they are all natives of India "except the Melon, 1051 seems probable that molam or mulam-pandu is but a modern corruption from the English word melon There are, however, many ancient and for example, (curbita and lassification ross fertilize

| · The Sweet Melon. | CUCUMIS Melo. |
|---|------------------|
| with the production of fertile seeds, the plants so experimented with may be viewed as varieties or even only cultivated races derived from a com- | HISTORY. |
| • | |
| • | 2261 |

terme individuals, as we see, for example, in the municul species, they must

monly stated that a fertile mule exists between the two species of Camel—Camelus dromedarius and C. backtraams—but the progeny is more unmanageable than the mule itself, and is accordingly very little bred (see article on Camel, C 203). But Naudin's physiological classification

2262

India.

[Mono Phanerog, III, 482; CUCURBITACEE. Cucumis Melo, Linn, Fl Br Ind, II, 620, Cogniaux, in DC.,

2263

The SWERT MELON (Stewart and also Baden Powell call this the Musk Melon, but by giving it at the same time the name Kharbuza they remote the suspicion of Cacapita moschata. The information furnished by these authors under "C. Melo, L—musk melon" has accordingly been compiled under this species)

Vera - kharbija ot kharbija khurbij ot kharbisa, Hind , Kharmij, Beng , farbij, Santal , Dungra, C. P., khurbisa, Kangra (in Settl Rept, 23), Kharabija, kharbij, chibuda, Bons , Chibunda, Mar,

seems probable that in Bombay Tarbuja and kharbuja are applied to distract forms of the melon

References.—Rorb. Fl Ind., Fd CBC, 701, Vengt, Hort Sub Cat., 53, Thanties, In Ceylon Pl, 117, Dale & Gb., Bomb Fl 103, Supp., 53, Streat, Pb Pl, 67, shith soon, Cat Pb and Sund Pl, 43, DC, Orig Cult Pl, 258, Nandan, Ann des Seen Natur., 4th Series, Viv. 1, Viv.

| 020 | Dictionary of the Economic |
|----------------------------|---|
| CUCUMIS Melo. | The Sweet Melon, |
| | |
| | Trop Agri , 423. |
| | Habitat.—Extensively cultivated on account of its fruit in the sandy basins of nivers. Said to be a native of North-West India, Baluchistan, and west tropical Africa (DC). Ainsile wrote in 1826 that C. Melo has been said to be a native of Calmuc Tarrary, an opinion adopted by Willdenow; in India it is cultivated by seed brought from Persal (see Tavernier) is called by |
| | Hindustan molam pu |
| OIL | which pre, methods of cultivation see under a further paragraph. A good plate of this plant occurs in Duthie and F Oil.—The flattened and ellip |
| 2264 | fact, the seeds of most of the mem and gourd family, contain oil, but any considerable extent are those of the Sucet-melon (Cucums Melo) any considerable extent are those of the Sucet-melon (Citrullus vulgans). From West Africa large quantities of melon seeds are exported to France. China also does a considerable trade in them, but in India the fruit is chefly eaten as such, and not allowed to right its seeds, and accordingly the supply of melon |
| MEDICINE Seeds. 2265 | oil is not extensive. Medicine.—The seeds are used as a cooling medicine.—They are |
| Mixed seeds. 2266 | · · · · · · · · · · · · · · · · · · · |
| | |
| Pulp. 2207 | diuretic, very beneficial in chronic, and also in acute eczemi. Lui, |
| F00D 2208 | |
| | |
| | forcing beds. This is the practice in growing melons in the out inversion as the Ganges and Juman, which consist wholly of white sand. Where the river deposit is of richer quality and contains a mixture of organic matter, a much less amount of manure is required, and it is |
| | C. 2268 |

| The Sweet Melon. | CUCUMIS Melo. |
|---|--------------------------|
| reported that occasionally manure is altogether dispensed with The melon beds commence fronting in April and continue yielding until they are | FOOD |
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| × + 1 - 1 | |
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| redshinin are stated to be tainer watery, but Mooreron declates inc. people fatten on them 'as horses are said to do in Bokhara.' Vigne states that the melone of That here he are no not corrected and | 2269 |
| | |
| it), several varieties of melon are extensively grown, and Dawes' Irade Report states that 300 mule-loads are annually imported thence via which, It has cherate imelon inch the | |
| In Manipur the meion is cultivated by the Nagas and is of a sphencal form with ten segments. The pulp of the fruit is usually sweetish and pleasant, and is eaten by Europeans as well as natives. | |
| Chiuvauin — Irminiger refers to two good forms of melons, one of which—the Afghan—has been alluded to above — He says "the kind which that I almost of all called the survida, is a native of Cabul, and has not that I asked to the the cultivated with success in any part of India". "The seeds of the the cultivated with success in any part of India" any other, being fully four times once to be distinguished from those of any other, being fully four times. The next time, second per haps only to the survida, and support to the survida, too, it so of haps only to the survida, too, it so of the green fields not it is of a large out form, with very smooth, pale green exterior, traced here and there with a delicate network. This succeeded most satisfactorily at Ferozepore, and was the one which | CULTIVA- TION 2270 |
| I cultivated exclusively. The seeds of this also may be known by the largeness of their size. Quoting from the Agri-Horticultural Society's for W H Bartlett, who writes "with culture in a manured soil, the smaller of these malors." | 2271 |

| CUCUMIS Melo. | Indian Forms of the Melon. |
|------------------|--|
| CULTIVA- | system by which the Cabul melon might be grown. It was, however, troublesome and expensive though attended with success. The chief features of this system were the selection of an open situation even by the contract of the |
| | a great point being the steeping of the seeds in warm water for 24 hours; afterwards retaining them in wet ashes or a wet cloth until they sprout; as soon as sprouted to be sown about a foot apart and an inch and half deep; lastly, to be deluged with water every day from sowing until the |
| 2272 | |
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| | • |
| | |
| i | |
| 0270 | dust the plants with wood ashes. This must, however, be highly injurious, and since in most cases with age the plants case to be attacked by the beetlea better course is to cover the seedling plants with a muslin frame. The following two forms are the eucumber-like plants which, by modern European botamists, are treated as melons, and are not even allowed the position of varieties from the type. |
| 2273 | (1) Cucumis Melo, Linn; var. Momordica. This form does not appear to be referred to in the Flora of British |
| | spherical-oxed) but it is frequently motifed. As Roxburgh says, the plant is more like the cucumber than the melon, except that it is less scabrous and larger. Alkinson remarks: "C. Momordica, Rost, the phint |
| | |
| 2274 | |
|) | ously when ripe; it is then from a foot to a feet long and from 3 to 6 inches in chameter, and weighs 4 to 8th. The seeds are smaller than |
| | C. 2274 |

| those of the common melon. A good drawing is given of the plant by Duthie and Fuller in Field and Gardin Crops: Vern.—Phat or phant (ripo), kichra (when unipe), futi, Hinto; Phuti, Beno, Kestar-kai, Tax, pedda hat, pedda-dayrai, Tax, Dr. U. O. Dutt says and Tax handband and the Burnetters Kurz in ha Report on Fogu gives That himshamany at the Burnetter Kurz in ha Report on Habitat—Cultivated here and there throughout India: Roxburgh remarks that in the Carnatic it is a cold season crop. According to | | |
|---|--|------------------------------------|
| Duthie and Fuller in Field and Garden Crops Vern.—Phat of phant (pop), katcha (when unipe), futi, Hixto; Phut, Beng, Kabarikan, Tan, Pedda kin, pedda-dayrar, Tr., Dr. U. C. Dutt says this is the Errain of Sanketh witers. Kurz in his Report on Pega gives Tha khwahumany as the Burmese Habitat.—Cultivated here and there throughout India: Roxburgh remarks that in the Carnatic it is a cold season crop. According to Medicine—The seeds are used as a cooling medicine, Food—Roxburgh writes.—"The fruit is much eaten both by Natives To William of the Carnatic it is a cold season crop. According to Medicine—The seeds are used as a cooling medicine, Food—Roxburgh writes.—"The fruit is much eaten both by Natives To University windesonne. 2278 Very windesonne. 2278 Cucumis Melo, Linn.; var, utilissima. Syn.—C. Uritissimus, Rash. Vern.—Kakri, kakni, Hind ; Kikkir, or kinkur (Kakri, according to Takhea, Burn. Re Description.—The various writers who have described the Indian melons, cucumbers, &c. give somewhat conflicting accounts of this fruit. Seedi. 2280 Fruit. 2281 some varieties of cucumber. | Indian Forms of the Melon, | CUCUMIS Melo. |
| BENG, Kabarr-kar, Tam, Pedda kan, pedda-dorran, Tat., Dr. U. C. Dutt says this is the Erran of Sankint winters. Peging gives Tha khwahamany as the Burnese Habitat.—Cultivated there and there throughout India: Roxburgh remarks that in the Carnatic it is a cold season crop. According to Medicine—The seeds are used as a cooling medicine. Food—Roxburgh writes.—"The fruit is ruch eaten both by Natives Tool—Roxburgh writes.—"The fruit is ruch eaten both by Natives 2278 Very wholesome. 2278 Cucamis Melo, Linn.; por, utilissima. Syn.—C. Utilissima, Hind; Kākār, or kānkur (Kakrī, according to Takhaa, Buran. Re Description.—The various writers who have described the Indian melons, cucumbers, &c. give somewhat conflicting accounts of this fruit. Seeds. 2280 Fraik Some varieties of cucumber. | those of the common melon. A good drawing is given of the plant by Duthle and Fuller in Field and Garden Crops | |
| Takea, Burn. Description.—The various writers who have described the Indian melous, accounders, &c. give somewhat conflicting accounts of this fruit. Description.—The various writers who have described the Indian melous, cucumbers, &c. give somewhat conflicting accounts of this fruit. Seeds. 2280 Seeds. 2281 some varieties of cucumber. | BENG, Kakari-kai, TAM, Pedda kai, pedda-dosrai, TEL, Dr. U. C. Dutt says this is the Eriaru of Sanskrit writers Kurz in his Report on Pegu gives Tha khwahumaay as the Burmese | |
| Medicine — The seeds are used as a cooling medicine. Food—Robburgh writes — "The first struck eaten both by Natives 2276 2276 2277 2276 2277 2276 2277 2276 2277 2276 2277 2278 2279 2279 | Habitat.—Cultivated here and there throughout India: Roxburgh remarks that in the Carnatic it is a cold season crop. According to | |
| Medicine — The seeds are used as a cooling medicine. Food—Robburgh writes — "The first struck eaten both by Natives 2276 2276 2277 2276 2277 2276 2277 2276 2277 2276 2277 2278 2279 2279 | | |
| Medicine — The seeds are used as a cooling medicine. Food—Robburgh writes — "The first struck eaten both by Natives 2276 2276 2277 2276 2277 2276 2277 2276 2277 2276 2277 2278 2279 2279 | (| OIL |
| 2278 Sym.—C. UTILISSINUS, Rost. Vern.—Kakri, kakni, Hind; Kikkir, or kinkur (Kakri, according to Takwa, Burm. Re Description.—The various writers who have described the Indian melons, cucumbers, &c. give somewhat conflicting accounts of this fruit. Seeds. 2280 Fruits. Seeds. 2281 some varieties of cucumber. | Food -Roxburgh writes "The fruit is much eaten both by Natives | 2275 MEDICINE. 2276 FOOD. |
| Syn.—C. UTHISSHUS, Rosh. Vern.—Kakri, kakni, Hinn; Kikkir, or kinkur (Kakri, according to Takras, Burn. Re' Description.—The various writers who have described the Indian melons, cucumbers, &c., give somewhat conflicting accounts of this fruit. Seets. 2280 Thuis. 2281 some varieties of cucumbers. | very wholesome. | I |
| Vern.—Kakri, kakni, Hind; Kikkr, or kinkur (Kakri, according to Takkva, Burn. Re Description.—The various writers who have described the Indian melons, cucumbers, &c., give somewhat conflicting accounts of this fruit. 2270 Seeds. 2280 Fruits. 2281 some varieties of cucumber. | | 2278 |
| Takres, BURM. Re Description.—The various writers who have described the Indian melons, cucumbers, &c. give somewhat conflicting accounts of this fruit. 2279 Seeds. 2280 Fruits. 2281 | | |
| Description.—The various writers who have described the Indian melons, cucumbers, &c., give somewhat conflicting accounts of this fruit. 2279 2280 2281 2281 | VernKakri, kakni, HIND; Kakur, or kankur (Kakri, according to | ł |
| Description.—The various writers who have described the Indian melons, cucumbers, &c., give somewhat conflicting accounts of this fruit. 2279 2280 2281 2281 | | |
| Description.—The various writers who have described the Indian melons, cucumbers, &c., give somewhat conflicting accounts of this fruit. 2279 2280 2281 2281 | | |
| Description.—The various writers who have described the Indian melons, cucumbers, &c., give somewhat conflicting accounts of this fruit. 2279 2280 2281 2281 | | |
| Description.—The various writers who have described the Indian meloscriptions, cucumbers, &c., give somewhat conflicting accounts of this fruit. 2270 Seeds. 2280 Fruits. 2281 some varieties of cucumber. | Takhva, Burm. | ĺ |
| Seeds. 2280 Seeds. 2281 some varieties of cucumber. | Re' " / Pri / Pri Care - " / Pri Care - " / Pri / Pri / Pri Care - " / Pri / Pri / Pri Care - " / Pri | , |
| Seeds. 2280 Seeds. 2281 some varieties of cucumber. | | |
| 2280 Fruits. 2281 some varieties of cucumber. | Description.—The various writers who have described the Indian melons, cucumbers, &c. give somewhat conflicting accounts of this fruit. | |
| 2280 Fruits. 2281 some varieties of cucumber. | | |
| 2280 Fruits. 2281 some varieties of cucumber. | | |
| 2280 Fruits. 2281 some varieties of cucumber. | • | |
| 2280 Fruits. 2281 some varieties of cucumber. | | |
| Fruits. 2281 | • | |
| some varieties of cucumber. | · . • | Fruits. |
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| C. 2281 | | |
| C, 2281 | minicipationary energing to a | |
| · | C, 228I | |

| sativus | The Melon; The Cucumber |
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| | and Fuller) In the Gazetteer of the Khandesh District, Bombay, it is |
| | |
| | i i |
| | d tunto acce throughout for a 1114 to plants, but that he has seen it in t |
| CULTIVA- TION 2282 | |
| | lud out in beds, and three or four seeds sown in patches a feet apart. Water should be given once in 10 days." (Indian Forester, IN, 161) |
| 01L 2283 Medicine 2284 | Oil - The seeds yield an oil Roxburgh describes it as a mild of |
| FOOD, 2255 | |
| 1 1 | during the hit weather months. Roxburgh gives the following account of the fruit. — This appears to me to be by fir the most useful species of C. |
| | and the second s |
| 2286 | I en illustration of the second of the secon |
| | nerve, who extine whose vain and any rew cutty con- of it with vinegar which is very like the cucumber, but has not so much flivour. |
| 2287 | Cucumis sativus, I ran ; Fl Br Int., II. 620. THE CICLEMPR The larger terms of the fruit, but for the expensive functions on the young a ste, vites of velty resembles C. Melo, we Momeratica, and also seen |

The Chrimber

CUCUMIS

622

utilissima, more nearly in fact than they approach the melon. Hence a certain

Syn -C HARDWICKII, Royle, Ill . 147

Sym — C. Hardwickii, Keyle, III., 147 Vern — Ahira Hind, Ankhai, Orissa, Sasa, khira, Beng Khira, Khiyar, Pa, Kakri Sinla, Kakri, kankri Bonb, Kakdi, Mar, Aakari Guz, Muhecehri, Tan, Dosa kira Tel., Sante kayi, Kan, Trabusha (according to Dutt), Sukasa (according to Piddington),

Dispens, 32, S. Arjun, Bomb Drugs 58 Hunter, Orissa, II, 188, Firminger Man Gard Ind, 126 Baden Pozell, Pb Pr, 347 Duthie & Fuller Field and Gar len Crops, 53, Li boa, U. Pl. Bomb, 159, Bird mood. Bomb Pr. 237 Plates 515

2288

antiquity of the species in Europe. There is even an Esthonian name, Uggantri ukhurti, urits. It does not seem to be Finnish, but to belong to the same Aryan root as aggourne. If the cucumber came into Europe before the Aryans, there would perhaps be some name peculiar to the Basque language, or seeds would have been found in the take duelling; of Switzerland and Savoy, but this is not the case. The peoples in 11-of Switzerland of the Caucassus have names quite different to the Greek; in Tartar kars, in Kalmuck chaya, in Armenian karan. The name chies cutst also in Arabic for a variety of the cucumber. This is, therefore,

mose of C Meio e is utilissima

"In sunstroke pieces of cucumber are put on the bed so the may breathe moistened air in order to neutralize the leat it is it."

[A Surgeon]

777

C. 72.

| 34 | Dictionary of the Economic |
|--------------------------|--|
| UCUMIS sativus. | The Cucumber, |
| FOOD. | The ramy season varieties are the most common, and are universally eaten by natives of all classes as well as by Europeans. The other varieties are the most common and are universally eaten by natives of all classes as well as by Europeans. |
| 2292 | and if so the further suggestion might be offered that it may after all prove but a peculiar form of Cacanas saturus. Most if not all the forms of |
| CULTIVA- TION 2293 | might be tricut in adultion to the preparation of carefully dired specime. 3 both of the natural and hybridised plants. Cultivation —These plants are alluded to by many writers, but it is scarcely necessary to report all their statements. The following abstract from the Indian Forestee (written by Mr. Gollan, Supenntendent, Botanic Gardens, Saharanpur) gives some particulars regarding the cultivation of hot season cucumbers or pherkins:— "This is a variety of the common cucumber, with small eggs-shaped," the same statement of the common cucumber, with small eggs-shaped, the same shaped by the common cucumber, with small eggs-shaped in the same shaped by the same shape |

both are about a foot long, and the colour changes to a rusty brown. These two, although not equal to the commonest varieties met with in England, are not to be despised. They thrive with lattle care and are always sure of yielding a crop

Firminger, in his atticle on Cucumber, deals fully with the two forms of the rainy season plant, but was apparently ignorant of the hot season one or did not view it as a cucumber. Speaking of the rainy season forms, he observes of the bitter sort that it "is of smaller growth and of a creamy-white colour when young, turning to a rusty colour at the ends as it ripens. This answers nearly to the description of the one called the 'White Turkey.' It is the better of the two for stewing, cooked in which

C, 2294

| The Cucumber. | trigonus. |
|---|-------------------|
| way it affords a very delicious dish during the rains, when so few other | CULTIVA- TION. |
| own in October it may be made to yield this is a point of some interest, since, if denived from the Indian wild stock, cultivation in Europe has completely changed the character of the plant. A writer in the Agri-Horticultural Society's Journal (IV, 21) says, however, that importing seed of cucumbers, only those grown in the open air should be got, frame cucumbers are useless for India. He recommends that they | 2295 |

DOMESTIC. 2206

on Shravan shudh 5th (Nagpanchmi day). It is likewise employed in the worship of many other gods "(Lisbon, U. Pl. Bomb, 285)

C. Hardwickii, Royle, has been alluded to as most probably only the wild state of the cucumber. At the same time it bears separate verna

wild state of the cucumber At the same time it bears separate verna cular names and is collected and sold for so very different purposes that it deserves an independent notice It is known as the air-din in Kumáon

2297

Cucumis trigonus, Roxb , Fl Br. Ind , II , 619

Syn — C PSEUDO COLOCYNTHIS, Royle, C TURBINATUS, Roxb, C MADER ASPATANUS Roxb, C MELO, LIMM, vair AGRESTIS, Naud, C PUB-ESCENS II all, C ERICCARPUS, Boiss, BRYONIA CALLOSA, Hird Rottler These are the synonyms of an aba Flora of D. 1. 1.7.3. 1. 1.

2298

This may be indicated thus -

C. Melo, Linn

Var a agrestis, Naud ; Syn C Melo, var pubescens Kurs (Trans

2299

Var & Culta, Kurs, Syn C Didnin, Linn C Flexiosus Linn; IV. & A Prod., 343, C Aronatices, Royle, Ill Illin Bot., ft 2, f 220

C 2299

| Wild Forms of Cucumus. those of C trigonus or C turbinatus, and in fact are almost reinform and often | CUCUMIS trigonus. |
|--|----------------------|
| those of C trigonus or C turbinatus, and in fact are almost reniform and often | |
| s fruit s fruit other | |
| 'anja', frants, frants, frants, frants, frants, frants, de by the natives and much exteemed, yet they never take the trouble to culvate the plant." Atkinson states of the North-West Provinces, that "C pubescens, | 2308 |
| | |
| · · · · · · · · · · · · · · · · · · · | MEDICINE. 2309 |
| he says it is much less batter than var pseudo colocynthis, "and is commonly used as a vegetchle after having been soaked in sait and water, the seeds of these concineration are expected and the pure of the Darra (Cynodon Dactylon)" 4 CRUMMS pseudo colocynthis, Royle. Syn —C FURSCHIS, Wild J. C. ERIOCARPUS, Boss J. C. CICCURSIATUS, Stocks, Vern — Indrayam (= colocynth), beståmbås in Northern India (O'Shaugh- | 2310 |
| n. n | 2311 |
| | |
| | MEDICINE. 2312 |
| perties ut this blant and of U. Hardwickii. "I | 2313 |
| C. 2313 | |

| CUCURBI | |
|---------|--|
| 2314 | latter in a 1667. Storety Innocetiyal era gives from the control of the control o |
| 2315 | CUCURBITA, Linn; Gen. Fl, I., 828. |
| | |
| | |
| | most probably a native of America, having been the source of all the American gourds and pumpkins that existed anterior to the discovery of America. M DeCandolle has not ventured to assign a habital of Communication of the communication of |
| | 57) re- lle's the quite misleading, most of them probably referring to Benincias certera- |
| | including Hoxburgh's Sanskrit name kurkarů. Cucurbita Citrulius, Linn.; see Citrulius vulgaris, Schrad.; Cucurbita [TACLE, C. 1221. |
| 2316 | C. lagenaria, Lun, see Lagenaria valgatis, Lun. C. maxima, Duchetne; R. Br., II., 622. MELON-PUNERUS, SQUASH GOUED, RED GOURD. The name GOUED is sometimes given to the fruit of this plant, but that is more correctly the name of Lagenaria vulgaria. Vi. 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, |
| | C. 2316 |

The Scuash Gourd

CUCURBITA maxima.

4 Daw 1 Jan

Botanic Diagnosis — Leaves, 5 palmate, lobes rounded, sinus, narrow; petiole, nearly as long as the blade, not prickly; fruiting peduncle, round smooth, corolla lobes, curved outwards, calyx segments, lanceolatelinear. 2317

Habitat.—C of the globe. as the musk-me 2318

find either C r ... the other hand a writer in the Indian Forester (IX., 202), and apparently, Mr. Gollan of Saharanpur, says—"Kudu (pumpkin) Cucurbita maxima" is

2319

chata), and Voigt, who wrote after Roxburgh, describes only C. maxima, to which he reduces Roxburgh's C. Melopepo Stewart gives an account of all three plants collectively under C. maxima

OIL. 2320 MEDICINE. 2321

Oil.—The seed yields an oil.

Medicine.—The seeds are used medicinally; the oil as a nervine tonic.

The pulp of the fruit is often used as a poultice

§ "Also called in Panjab Ghis kaddu. The fruit cut into small circular chips is a good application to releve the butning of hands and feet in fevers" (Asst. Surgeon Bhagwan Dass (and), Surgeon, Rawal Pindi, Panjab), "The pulp is used as a positive to boils and carbuncles"

paory appear areas see 1 spo -24 [

Food.—This plant produces the largest known cuturbitaceous fruit, in some cases weighing as much as 240th, and measuring nearly 8 feet in circumference. The fruit is wholesome, and when young is used as a vegetable. It is sweetish and yellow. When mature it will keep for many months if bung up in an arry place. It is largely used by natures of all classes in curry, "When very young and tender it may be employed as a pleasant vegetable for the European table, by being boiled, pression."

F00D. 2322 610

CUCURBITA moschata.

The Music Melon

ed down to extract the water, and served warm, with butter, salt, and pepper" (Mr L. Liotard).

Mr Gollan says of "kudu (pumphin) Cocurbita maxima" that there are several varieties of this plant common in the gardens as a rainy season vegetable The commonest one is a large globular gourd and of a brown colour. The young fruit resembles the vegetable marrow in flayour but the full grown fruit is also very good. The seeds should be sown from April to June. The plant requires very rich soil and the general treatment is the same as that for Lagenaria vulgaris (tre Al

kudu \" Firminger remarks of the "Red Gourd" or sufuri-kumra, also Lal-2323

> carrots are, it can hardly be distinguished from them either in appearance or flavour An annual seed sown in the rains; vegetable in use during the cold season, not often cultivated in gardens suspected that Firminger alludes in the above to C. moschata (forma

dian writers · vulgaris the "Cucurbita of the same Irop . while

mon Gourd

cultivation,

Cucurbita moschata, Duchesne, Fl. Br Ind. 11, 622. THE MUSE MELON, Eng., POTIRON, Fr.

Syn -C MELOPEPO, Roxb

Vern —Sitaphal, saphars kumhra, kumra, kaddú, mitha kaddú, N -W P.; Kati-dudhi, Boms

This is said to be the Abobrade Guinea of the Portuguese in India. Botanic Diagnosis - Leaves as in the preceding but very often mar-bled with whitish blotches petiole hairy but not prickly fruiting pedun-cles angular and furrowed, cally segments of the female flower large

foliaceous There are two primary forms-one with the fruit smooth but mottled brown and yellow (C moschata proper), and the other with the fruit tor-

ulose or fluted, with 15 to 30 ridges (C Melopepo, Rorb) Habitat - Very extensively cu

The long account given by Firminger (Van Gar for India, 128) under the heading "C Melopepo, squash" has reference to imported seed of Squash, Gourd or North-West iot live in the (in Field and of Cucurbita

C. 2327

2324

2325

2326

2327

| The Pumpkin or Vegetable Marrow. | CUCURBITA Pepo. |
|--|---------------------------|
| season, &c. They state that only the Cucurbita there figured appears occur in the North-West Provinces Thur plates seem to represent form Roxburgh called C. Melopepo and not his C. moschata proper the idea be correct that the fluted fruit is C. Melopepo. | the l |
| *. *********************************** | - |
| C. Melopepo which would have answered to Mr. Powell's description tinds. | 2330 of (|
| Cucurbita Pepo, DC.; Fl Br. Ind, II., 622. The Pumpain, Vegetable Marrow. | 2331 |
| Syn.—C Pero, Roth Roxburgh included the plant (the pumpkin) as well as Benincasa cerifera, Savi (the white melon) under one species. Atkinson, Drury, | |
| mouth, and the anihers are more or less united. The fruits of Benin- | |
| | |
| | |
| | |
| does Botanic Diagnosis,—Leaves 5-palmate, sinus, broad and segmented, petiole as long as the bade, the hairs of the lower surficient of the lower sur | ent ace |
| En et a d'Ammand foi anneille unes de la de En de de la deservición de la defenda de la deservición de la defenda del defenda de la defenda de | . " |
| | : |
| | OIL. 2332 MEDICINE. |

nal applications for burns.

| 042 | Dictionary of the Leonomic |
|---------------------|---|
| CUMINUM Cyminum. | The Pumpkin or Vegetable Marrow. |
| MEDICINE. | Special Opinions —§ "The seeds are antheliminto and used in cases for round worms though uncertain in action" (Gruil Surgeon J. H.Thornton, BA., WB., Monglay) "Grubler has isolated from pumpkin seeds a crystallivible vinety of albumen. Hemp and crstor oil seeds also contain a seed as a crystallivible vinety of albumen. Hemp and crstor oil seeds also contain a seed as a crystallivible vinety of albumen. |
| F00D 2334 | |
| | |
| İ | |
| Polled 2335 | |
| Twigs 23_6 | seen the pumplin (C. Pepo) in Assim, although the two fruits named are common in Assim, Cichir, and Minipur The system of boiling in klar water is, however, very interesting to whichever fruit it applies and so also is the fact that the young tsugs are evien as a poth-herb Under the nimes. "C. Pepo, DC, pumpkin or white Gourd—kunhra, kunara, ladim ih peth (in places), kondin the lauks and kaddu safet of Bijnor," Mr Baden Powell, and after him Mr Alkinson record an interesting fact which most probably should be given under Bennetas centers. "As |
| Sherbet. 2337 | sherbet is made by filling the hollow centre with sugar and exposing in the sun until it becomes acid." |
| DOMESTIC | Domestic and Sacred Uses - |

2338

ship of this plant considering it

and Narad priest of the gods tell of this cucurbitaceous plant (vide page 310 of viair if its screen, called from Pilmi Puran) Its fruit is also cut with some ceremon, called kohala muhurt, a day or two before a marriage" (Lisboa, U Pl Bomb, 285)

CUMINUM, Linn, Gen P1, I, 926

Cuminum Cyminum, Linn , Fl Br Ind , II , 718; UMBELLIFERE. 2330

Cumin, Eng, the Kumiyovnphepov of Dioscorides, Cuminum of Hornce and Persius

Vern – Zirá, Hino i Jiroka, jiroka or ojóji (Ainsi e) "Giroka, jirokan" (Elliot), Sans, Jiro, Beng, Jiró, jiro alani, Gr. Jiro gire Man, Aman, Akay, Zera, Less, 200 Stragen, Jan, Jiroka, "jilatarra" (Elliot), Ti., "Jones on Stragen, Jones in, Man, Dara, sada dara, Sino Ziya, Bush.

A cons detable amount of confus on exists in the vernacular names for this plant, Aira or Yara be ng also applied to Carom Caruí (Sec C 681).

The Black Camma, of the Bee-Metastyne of Hippocrates and Dioscorides, and the Gill of Pliny 12 Nigella sativa

Habitat -- More or less cultivated in most provinces of India except perhaps Bengal and Assam There seems no doubt the plant is not a native of Ind a Roxburgh is silent on this point, but Ainslie, who wrote

The Camin

CUMINUM Cyminum.

about the same period says of the Calcutta Botanic Gardens (which were then under Dr Roxburgh) that "the plant, however, is growing in the Bo

2310

and and, the quantity seems enormous munds as exported by that route Atkinson makes no mention of the Santa authority also gives 25 Akinson makes no mention of the Santa authority also g

he plant

References -Roxb, Fl Ind, Ed CBC, 771, Vorg!, Hort Sub Cal,

Oil -A medicinal oil is prepared from the seeds (=fruits)

Medicine.—As a med cine Cumin seeds are considered aromatic, carminutive, and stimulant. They are also stomachic and astringent, and useful in dyspepsia and diarrhea. The Pharmacopara of India says

OIL. 2341 MEDICINE 2342

| | • • |
|---------------------------|--|
| CUMINUM Cyminum. | The Camin |
| MEDICINE | or Persian, Nabit or Nabithean, Kirmani or black Cumin, which the say is the Basilkon of the Creeks and Shind or Syrian They conside it to have the same properties as the cartway "(Dynaed) Dutisaye tha emade of cumin seeds with this "to be applied externally for |
| CHEMISTRY. 2343 | we and stormeline, balf draching doses, in combination, never alone (Assist int Surgeon Netal Sing, Saharinipore) "Seeds mixed with lime pure are used in bilious nauseain pregnant females" (Surgeon-Hagor F J. R. Aution, M. D. J. C., Salam) "Siful sira is taken internally shortly after child-birth to increase the section of mili." (Crul Surgeon R Gray, Lairy). "A quantity of the seed lightly smeared with Phi put into a pipe and smoked relieves liceopy (Surgeon-Hagor D R Thomson, M. D., C. E., Madrist)." "A require galactagogue." Practitioner" (No. 1881, Vol. XXXIII. 19. 385, and p. 161 (quoting Lancet, 1874) however demest his activation produced in Dymock's Materia (Maker (and Ld. 269). Its not necessary therefore to repeat the information there given, since either of Indian Materia Medica. Professor Warden has, however, contributed the following bird in the publication." |
| | "The fruit contains an essential oil, which is a mixture of Cymol and Cunimol, and other hydrocarbons Cymol is also a product of the dry |
| FOOD. 2344 | distillation of coal tar |
| -0 | |
| TRADE 2345 | the natives Trade - Cumin (or Cummin) would appear to have been known to the ancients, at least there are names for it in most of the classical lan- guages During the middle ages it was one of the most favoured of spices. In one instance it is recorded that during 716 A D and of contain provision was Normandy. |
| Foreign Trade. 2346 | European cot frequent use, don had the weighing and oversight At the present day the European demand has greatly declined, the Parish of the present day the European demand has greatly declined, the Parish of th |
| 2347 | ds of other rly levied, |
| | export of Cumin from Bombay 20,040 cwt from Calcutta in the year 1870-71 quotatoms, since only about one-lourth of those amounts left India, the remainder-represented the coasting traffic, and hence a further error, since some of the coasting imports into each of the ports named would have Cr. 2347 |
| | |

| | UPRESSU: funebris |
|--|----------------------------|
| reappeared again in the foreign exports therefrom. Thus of the exports from Cylcutta 14,037 cwt went to other Indian ports, nearly 2,000 cwt going to Bombas, an amount which must have greatly influenced the Bombay exports of the year. These remarks have been considered necessary owing to its being customary to find India assigned a far larger share in the world's trade in Cumin than is justified by the official returns. An analysis of the figures for the year 1852-76, compared with those for 1886-87, will remove this misconception. Last year the total exports were —Indian groon Cumin 9,051 cwt. I foreign imports re-exported 1,260 cwt, or a total of 10,311 cwt. This amount was valued at R4,14,86 in 1875-76 be total exports were 8,120 cwt, valued at R9,1,010. The foreign trade in Cumin has thus slightly improved, but it falls far short of what most readers would infer from the amounts quoted above as exported from two of the Indian ports of the Company in the state of | TRADE, Poreign Trade, |
| Bomba ew G m Ea ew G | Internal Trade. 2349 |
| • | ! |
| ч | |
| Indian market Dr. Dymock says of the Bombay traffic in Cumin that it "comes from Jubulpore, Guzerat, Rutlam, and Muscat Value, Rutlam, R8 to R9 per Surat maund of 37½ lb., Muscat R6 to R6½, Guzerat, R3 to R7½, Jubulplore, R3 to R6" | |
| Domestic and other Uses —By the ancients smoking Cumin seeds was considered to produce pallor of the countenance | DOMESTIC. |
| Cuprea Bark, the bark of Ramija purdicana or R pedunculata, see Cin chona, C 1152 | |
| CUPRESSUS, Linn, Gen Pl, III, 427 |]. |
| Cupressus funchris, Endl , Brandis, For Fl , 534, Gamble, Man. The Weeping Cypress Ven.—Chandang, tchenden, BRUIIA | 2352 |
| Habitat — A handsome tree with pendulous branches, and a fibrous brown birk, often planted in Nepal, Sikkim, and Bhutan, near temples and monasteries, and in China (Gamble) | • |
| C. 2352 | |
| | |

| - 40 | Dictionary of the Lionamic |
|---|--|
| CUPRESS torulosa | |
| 2353 | Cupressus glauca, Lam Habitat - Very generally cultivated in Western India above the Ghats (Dils & Gibs, Bomb Fl Supp, 83)] |
| 2354 | C. sempetvirens, Linn The Capress Veta—Sara, tards, N-W India, Firath, Sind; Sarbboke, Mar. |
| ļ | References To k of the one to the state of the |
| | |
| MEDICINE | Worker and animal of the strong of the stron |
| 2355 Fruit. 2356 TIMBER. 2357 | Very It used [Brands] to twick and boxes, the contents of which are proof against most insects [Brands] |
| 2358 | C. torulosa, Don |
| | HINALAYAN CYPRESS Veta — Devi-due, Ravi, Deodar, Kulu, Bhajii, Gulla, gulra, kallain, Sinala, Ledare, Jawasar, Kaisalla, sarai, Kunaon, Sarri, swah yi. Tietr References,—Voigt, Hori Sub, Cal, 558; Francis, For Fl, 532; Comment |
| | Habitat —A large tree growing on the outer ranges of North-West Hindinya, from Chamba to Nepal, scattered or in numerous isolated localities of greater or less extent, chiefly on limestone, between 5500 and 9 000 feet. Common on the north of the Shalai, Simla, and at Naim |
| RESIN 2350 TIMBER 2360 | |
| ſ | speced ark. It is often burnt as incense in temples. The Indian Forester (Vol. A., 63) gives the following analysis of the ash:— |
| | Soluble polassium and sodium compounds ocosi Phosphates of uron, calcium, &c ocj? Calcium carbonate of oci |
| ļ | TOTAL , |

| Copper. | CUPRUM |
|--|----------------------------|
| CUPRUM or COPPER. | |
| Cuprum; Man. Gol Ind., III., 239, IV., 4 Copper, Mineral de Cuirl, Fr.; Kupffrerz, Kupfer blende, Germ, Minerale di rame, Ital. | 2361 |
| Ver- 7 III I 4 111- D. 7 - Days 7 was C as * | • |
| | |
| R€ | |
| • | |
| | |
| | |
| Consult also the numerous publications referred to by Ball (Man Geo Ind., III., 611) | } |
| DISTRIBUTION OF COPPER ORES IN INDIA—The following brief note has been furnished for the present publication by H B. Medlicott, Eq. | DISTRIBU- TION. 2362 |
| | |
| • | |
| mining has been practised on a large scale, but is now almost extinct. In Afghanistan, copper ores have been mined to a considerable evtent at various places. In the Kumaon and Garhwal districts of the North-West Provinces, copper deposits occur which have been several times unsuccessively and the several times unsuccessively and the several times unsuccessively a partial participation. It is a participation of the provinces of | |

been worked in the Karmul and Nemore districts of the Madras Presidency.

For detailed information regarding the Indian mines and sources of copper ore the reader is referred to Ball's account in the Manual of

CUPRUM

Copper.

DISTRIBU-TION

and also in several of the groups of transition rocks, as, for example, in the Cuddapah, Bijawar, and Arvali groups In extra peninsular India they are found for the most part in highly metamorphosed rocks, the precise age relations of which to those of the peninsula are not in all cases clearly made out as yet

2364

"The ore of most common occurrence is the copper or pyrites but towards the outcrops it is commonly altered into carbonates or oxides The associated minerals are in general identical with those which are found under similar circumstances all the world over. Recent analyses by Mr Mallet have tended to clear up much of the uncertainty which

tions, the copper ores of In In In and are a sparsely disseminated or a

sive bunches and nests ir

cracks and fissures travers

filled with ore which thus resembles true lodes In nota few cases it is be-

flows through tertia metal, reaching up stream, and were ernor of Ladakh, se

Geological Museum (weighing about 21 oz) cut from a lump of some

FOREIGN 2365

old copper, unwrought and wrought copper, amounted to 015 049 cwi valued at R1,99 to 085. For the past 20 or 30 years the imports of copper have steadily increased with the increased agricultural properity of the people, but within that period they have borne a marked relation to the fluctuations of agriculture. In the year 1885 36 the

opper nuary

| Products of India. | 049 |
|---|----------------------------|
| Copper Sulphate. | CUPRI Sulphas. |
| of this year it had further failen to ne much lower, falling below £45 than it has ever been, being more state 30 per cent below what the trade had revrously considered a safe and moderate price. This declared had revrously considered a production in the United States, and it would seem to those who are in a position to estimate the conditions of future production there and elstand it has a soper cent. | FOREIGN TRADE |
| rree-fourths every year s trade is, however, more apparent than real, as a large proportion of it is due to the | |
| for the first and apparent than item, as a stage proportion on it is due to the fact that it comes direct to India instead of sa England. This direct shipment is of great value, as it means that the commercial relations of India with Australia are becoming more intimate. | |
| Cupri Sulphas, | 2367 |
| COPPER SULPHATE OF BLUE STONE | |
| Vern -Nila thutha, nila tuta, nilta tutiya, Hind , Mor tutta or mhor- | |
| | |
| References — Pharm Ind. 378; Moodeen Sheriff's Supp to Pharm Ind., 123, U C Dutt, Mat Med Hind., 66, Waring's Basar Med., 46 | |
| * 000 (01) (0-1) | MEDICINE, Salts 2368 |
| wapraksia says it contains some copper and therefore possesses some of the properties of that metal It is described in this work as astringent, | 2369 |
| | |
| | 2370 |
| porating to crystalization According to European Medical practice pure sulphate of copper is tonic, astrogent, emetic; in large doses an irritant poison Locally ap- | 2371 |
| pled in substance to a denuded or granulating surface, midly caustic, styptic, and an solution stimulant. The article so used is imported from Livoge. It is largely used in chronic dysentery, diarrhea, epileps, chorea, and hysteria. Locally, it is applied in solution in genorrhea, leutorrhea, purulent ophthalma, weak ulcers, superficial homorrhage, | 2372 |

CURCULIGO Orchioides.

Copper Sulphate

MEDICINE.

and, in substance, to cancium oris, aphthous ulcerations, evuberant granulations, and granulations conjunctivitie (Pharm. Ind.) Waring to commends an emetic of 5 grains of sulphite of coping in the production of prium, Dutra, Nux Vomera, Occulus Indicus, Bish, Aconitel, Areconite, Areconited, and Areconited Arec

Spe is a re

nally"

expect (Robb, Ahmedabad) "Sulphite of copper is used internally as astringent in chronic dysentery and distribuct in dose of \(\frac{1}{2}\) to \(\frac{1}{2}\) of grun, also applied externally" (Asst Surgegen Robb) Sing, Subarumpore) "Copper coms, on which there is a deposit of verdigits, are kept for an hour of two in a mixture of (ripe) timarind and water, and then rubbed on parts of body attacked by urterna" (Howaray Surgeon P. Kintley, Chriscole, Ganjam, Madras Prendency) "Useful as a memc in case oposioning" (Crist Surgeon T. H. Thornton, B.A., V.B., Monghyt) "Copper fool (Sabatra, Sw. shil), E. Afreca) cut into smill pieces about an inch or more square, which are spread over the chest before and behad is the native (African) treatment of cough and all general dest troubles.

Plates. 2373

Two dozen of these thin copper plates were counted in a case that came up for other treatment; their application is on the principle of a series of small blisters or counter-irritants" (Zanzbar).—Surgeon-Major John Robb, M.D., Suredi, Bomba, Presidency.

Correr Levy — A thin copper foil is sold in the Muscat baruras in external application to unhealth, ulcers I is applied like thin Guitapercha tissue over the surface of the idea and secured for days by means

Leaf 2374

of a bandage

CURCULIGO, Garin , Gen Pl., III, 717

2375

[p 124, AMARYLLIDEM. Curculigo orchioides, Garin, Baker, Linn Soc Jour., XVII.

Most authors refer the native medicinal tuber known in the Panjib as styah musil to this plant, but Stewart says it is obtained from Andema tuberosa, Ham, and Dymock describes it under Hypoxis orchoides, Willd, stying Curculego orchoides as a synonym In Bengal the tuber is generally, known as Tall use.

Syn.—Curculido Malabarica Wight, Ic, t 2043, Hypoxis orchioldes Auts, in Ann Mus Lug Bat IV, 177 Orchis amboinica Major

> (varahı, «, TAM iti gadde,

1, 1, 242 rm Ind, tat Bled m Ceylon , Rheede,

Sivah Musli

orchioides.

Habitat —A small herbaceous plant with a rosette of radial leaves and tuberous root, nature of the greater part of the hotter regions of India and Ceylon Roxburgh says that in culturation it flowers all the year round Medigine —In most Hindu and Muhammadan works on Materia

MEDICINE Black root

white Asparagus adscendens According to some writers the young roots of Bombax malabarroum constitute one of the white medit, and by others the black and white forms are obtained from one and the strue plant during different states of its growth. Dr. Moodeen Sherriff remarks that in South India a lake sufeed medit is sold which is obtained from Asparagus samentosis (A. 257). On the other hand Dr. U.O. Dutt says. "The roots of Bombax malabarroum and of Asparagus racemosus are sometimes sold by the native druggists of Calcutta under the name of officer of "These control of the says."

c ensuois as the kali musis. He further states that much of the latter root sold in the Bombay Presidency is Ancilema scapiforum, Wight (Conf A 1122) Dr Dutt says of C orchiodes. The tuberous roots of

2379

and sometimes given with milk and sugar, in doses of two drachms in the twenty four hours in cases and apply the drachms in says "1] genorthed distance a

distac, a Medical

> Rutlam maund or 3/315

TRADE 2380 G¢2

angustifolia

Manco Ginger

CURCUMA, Jirn : Gen Pl. III. 642

23S1

Curcuma Amada, Rath., Fl. Ind., Ed. C.B. C., 12; SCITARINELL MINI O-GINETE.

Vern - imitalis, Hinn; Karpura-hardra, Sinc., Amidi, Benat imba ka adar, Nik, imitar technalirat, Dec., L'antinauan, Til. Sir Walter Elliot (F. Anth., pp. 17 & 111) gives the plant the Telega names of Mamudi alam and tru lands lacking but he remails "are han'a, meaning 's tere, the i-granatite, 's x por ed' are also given as synonyms of A a attrast or Curcuma Casta and seem to be mert y Santknt forms of the same word, both pr bably re entirg more correctly to C. Zedoaria or long Zedoary "

References. - 1 met, Hort Suk Cal, etc. Phorm. Ind., 22 O Shanck ness. Bene Disposa, etc. (Dut., Var Ved Hind., 22 Sui. S. Arjun Bomb Drace, 140 Ireine, Mat. Med. Patna, 4, Dinty, (

Pr. 1'9. Ba four, (such , bes Hab tat - ho and wild in Beneral and on the hills; flowering dunn't the latter half of the rains

WEDICINE. Tohere 2382

Medicine. - The TUBERS are regarded as cooling and as useful in prung) They are also employed as carn instare and stemach c. When tresh they possess the smell of the erreen manera hence the sar ous names above Dr Irvine (Wit Met. Patna, e 4) says of this roo-stak that it is used as a commanue and to promote direction, dose from a to

In the Pharmacahora of In-sa it is stared that they do not possess

External application. 2383

200-72) Local is affined over cortine one and sprains, tonsecon-glasor in Civil Surgeon, Ahmelahad) . Roots are expectorant and as fingent, useful in diarrhora and gleet" (Surgeon-Major & M Houston Durbar Physic,

Transn we and Cert Apotte ury John Gomes, Medical Store t eper. Tre indram) Food .- Used as a condiment and vegetable (U. C. Dutt)

FOOD. 2384 2785

C. angustifolia, Raib , Fl Int , Ed CBC, 10, 11. WILD OR EAST INDIAN ARROWSCOT, NARROW-LEAVED TURNERICA

Vern.—Tilkur, Hind Ararni-logadd, DEC., Javakhra, MAR., New-gaide, NANARY, Jular, BONR., Ararni-lishangu, Ind. TAN., Ararni-gaddalu Tes.

References - | ougt, Hort Sub Cal , 5'3; Da's & Gibs , Bomb. Fl., P4;

Habitat - A native of the central tracts of India, from the mountains of Bengal to Bambas and Madras. Is particularly abundant in the Central Provinces, and a considerable trade is reported to be done at Ra pur in the collection of the tubers. The plant is all a common at Ram that, Bombas Is es d to grow wild in North Canara (Bombas), Lui to be also cultivated (Gaz., Al., pt. 11, 20) Mr Atkinson remarks that, it is

Wild Arrowroot.

CURCUMA angustifolia.

found wild in the North-West Himalaya. The flowers are large and yellow, longer than the bracts, they expand in the morning and wither in the expanse of the same dis

Cultivation of East Indian Arrowroot.—Perhaps the most complete accounts of the cultivation of this plant are those which will be found in the Reports of the Sydapet Experimental Farm, Madras The following

CULTIVA-TION 2386

Madras Rootstocks. 2387

the above yield would represent an outturn of 403lb of flour per acre In another case in the College Experimental Garden, a plot, measuring 1,160 square yards, planted with this crop yielded 1,79816, or at the rate of 7,500lb per acre The culture of this crop is very simple: it is only necessary to plant the sets in properly prepared soil, and to water them occasionally during the dry season. The removal of the crop is tedious unless the tubers can be ploughed out, as potatoes are done in England. which is seldom possible owing to the dryness of the soil, so that the tubers have to be dug up The preparation of the flour is also very simple and easy The TUBERS have only to be reduced to pulp on a grater, after being well washed to remove soil and dirt, and then the pulp is mixed thoroughly with water so as to separate the starch completely from the fibrous matters The whole is afterwards strained through cloth, through which the STARCH and water passes, and the fibre left behind After this the STARCH has only to be thoroughly washed by decantation with clean water, and dried in the sun. It is then rolled on a table to break it up thoroughly into fine flour and is ready for sale. The flour can be produced at a very low price; it could be sold profitably at 4 annas per pound. And thus 400 rupees per acre could be realized. This is a remarkable return and should also be published for the information of the public " "The following extract from a letter from the Collector of South Kanara, dated 10th March 1882, No. 517, will be found interesting: "With re-

Starch. 2388

Profits Rs. 400 an acre.

South Kanara. 2380

plant in this district (with its annual rainfall of about 130 inches between June and November) would be thankfully received The plant, I believe, a angusti-

ference to paragraph 48 of your report on the Saidapet Farm, recorded with the Board's Proceedings dated 10th December 1881, No. 3182, I

nation and

CHEMISTRY, 2390 Inferior to Maranta, 2301

neided by sample marked '1st sort' is of a superior description and nearly as good as that of the Maranta. This sample is susceptible of further

654

CURCUMA angustifolia

TATILA Arrowroot

improvement at contained a number of extraneous matters, black particles. ng the process of The three sam presence of slight ion of the starch the Farm sample

Solar heat to be avo ded Use of Caustic Soda

immédiate conve tion of caustic soc water for steeping found useful in

Thorough washir soda " The arrowroot is said to be largely manufactured at Cochin Travan

Cochin 2302 Travancore

core, and hanara Royle says that "a very excellent kind called ticker is also made at Patna and Baglipore from the tubers of Batatus (Ipomea) edules 2303 Medicine -The arrowroot is used medicinally in come parts of the Subst tute

2394 MEDICINE Arrowroot. 2305 Arrowroot 2306 Benares

country Food -A good quality of arrowroot is prepared from the tubers especivily in Travancore, where the plant grows in abundance Roxburgh observes that a sort of starch or arrowroot lke fecula is prepared

2307 Thicken milk 2308

which is sold in the markets of Benares, and is exten by the natives The flour, when boiled in milk forms an excellent det for pat ents or children It is largely used for cakes, puddings &c , though it is often complained of as producing constipation. The granules much resemble the 'a fayour to stratified The mikarticle of c men in Bomb ty use it to thicken milk which I is occu watered edible properties of the tubers of this plant are alluded to in most of the

PREPARA-TION OF ARROWROOT Travancore 2399

> prepared The process adopted in the Upper Godavari D strict to is, 505) is thus referred to "Tankir or Tikhur is a description of arrow abbed e ther azars ωÀ

..

CURCUMA Wild Turmenc aromatica for export" (For further particulars see the paragraph on Cultiva-PREPARA tion)

> Malabar. 2404

be trusted as referring to this or to the true arrowroot. See Maranta arun-

Dymock remarks of Turmeric (Curcuma longa) that the starch "of the young tubers at the end of the radicles, which are nearly colourless, forms one of the Last Indian arrowroots. It is to be observed that the tubers that yield only starch when young will yield turmeric when old, the colouring matter and aromatic principles are deposited in the cells at a later period of growth."

Turmerie. Starch 2406

Curcuma aromatica, Salish, Roxb, Fl Ind, Ed CBC., 8.

WILD TURMERIC, YELLOW ZEDOARY, COCHIN TURMERIC

SVn -CURCUMA ZEDOARIA. Roxà

kasturi man kattu manna Roxburgh

SING , Liydsanoin, BURM References - Voigt, Hort S 1
Ainslie, Mat Ind I, 49,
125, U C Dutt, Mat Me
Ind 769, Year Book P
regarding Pharm Ind,

Habitat -Roxburgh says of his Curcuma Zedoana "This beautiful species is a native, not only of Bengal (and common in gardens about Calcutta), but is also a native of China, and various other parts of Asia and the Asiatic islands Flowering time, the hot season, the leaves appear about the same period or rather after, for it is not uncommon to find the beautiful, large, rosy, tufted spikes rising from the naked earth before a single leaf is to be seen" 'The plant when in flower is highly orn mental few surpassing it in beauty, at the same time it possesses a considerable degree of del cate aromatic fragrance "

The flowering spikes are quite distinct from the leaf bearing stems,

cr, ıth ar ıld a

Concan. 2100

Bengal

2107

Malabar. 2408

nd observe that the leaves when young have a central purple stain which

| 030 | Dictionary by the Librorate |
|--|--|
| CURCUMA aromatica. | Wild Turmeric, |
| Mysore 2410 Travancore. 2411 HISTORY. 2412 | almost disappears when they attain their full size." Drupy remarks that its abundant in the Travanoreo forests. Of Mysore Mr D E Huttens siys C aromatica, the Kad arasina, is collected from the forests all over the province. History of Jadvar and Zedoary.—The reader is referred to Aconstim theteophyllum, (A size & 40%), for further princulars regarding the use of the Arabic word Yadvar. According to certain writers (including Rose burgh) this is a piled to a species of Curcuma, presumably the present species. To Dr. Moodeen Sheriff we are indebted for the results of much erest. It is a proper to the province of the present species of the province of the present species. To Dr. Moodeen Sheriff we are indebted for the results of the present species. To Dr. Moodeen Sheriff we are indebted for the results of the present species. To Dr. Moodeen Sheriff we are indebted for the results of the present species. To Dr. Moodeen Sheriff we are indebted for the results of the present species. To Dr. Moodeen Sheriff we are indebted for the results of the present species. To Dr. Moodeen Sheriff we are indebted for the results of the present species. To Dr. Moodeen Sheriff we are indebted for the results of the present species. |
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| 1 | 1 |
| 2413 | of the Bhotias, who |
| | S S 12 Annual multi-mult |
| 2414 | is used by |
| 2415 | ahlo bikh kh of the |
| 2413 | Mobile is given as a tonic in dyspepsia, fevers, and asthma Lastly, a plant never before recorded as used medicinally, namely, Caragana crassicants, is |
| | |
| 2416 | |
| | C. 2416 \ |

Wild Turmeric

CURCUMA aromatica.

Nepal, "must not be confounded with the word Nirbisi, which is the Sanskrit for Curcuma Zedoana " To the hill tribes around Simla and Kulu, at : - : DESCRIP-Often more than with circul 2417 some of th almond in few fleshy a deep orange colour like turmenc, the odour of the flesh root is strongly camphoraceous" Dalzell and Gibson say . "The tubers of the root are palmate " n_ 1 i in DYE its 2418

ays the e it Cosmetic. y, a leli-2410 EDICINE Rhizomes

t us to promote eruptions." Ainslie says the Muhammadans suppose it to be a valuable medicine in certain cases of snake-bites, administered in small doses, and in conjunction with golden-coloured orpiment, kust

(Costus arabicus), and ajuan " Special Opinions.—§ "Used externally in scabies and the eruption of small por" (Surgeon-Vajor Henry David Cook, Calicut, Malabr).
"Rubbed into a paste with benzoin is a common demestic application to the forehead for headache" (Surgeon-Major John North, I M S., Bangalore) "Applied to the forehead in cephalalgia, and a cosmetic."

2 17

C. 2420

l as 2420

| 050 | Dictionary of the Economic | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|
| CURCUM! | Black Zedoary. | | | | | | | | | | | |
| TRADE. 2421 | (T. Ruthnam Moodelliar, Native Surgeon, Chingleput, Madras Presidency.) Trade,—"The Bombay market is supplied from the Malabar coast. Value, unpected R24 to R25 per candy of 5\(\frac{1}{2}\) cut; pected R27 per candy "(Dymock). | | | | | | | | | | | |
| 2422 | Curcuma cæsia, Roxb.; Fl. Ind., Ed. C.B.C., 9. BLACK ZEDOARY. Vern — Kila haldl or nil-haniha, Beyo ; Káli halada, MAK.; Nar-kachára, Roma Nar hask in little in li | | | | | | | | | | | |
| Bengal. 2423 Dinspore. 2424 | Habitat.—Roxburgh remarks: "This elegant strongly-marked species is a native of Bengal, where it blossoms in May" and just before the rans. "In the deep ferrug resembles C. Zerun Dymock says it is the Indian mack. He adds "through supplied with living me that it is common in gardens in Bengal, and is used as a domestic remed." | | | | | | | | | | | |
| MEDICINE Rhizomes, 2425 | Per mos and and sool under | | | | | | | | | | | |
| Cosmetic, 2426 TRADE, 2427 | are medi- Trade.—Dymock says the tubers are internally very hard and horny, of a greyish black, but when cut in thin sloces of a greyish-orange. The odour and taste are camphoraceous, "The drug contes overland from | | | | | | | | | | | |
| 2428 | C. caulina, Graham; Dalz, and Gibz, Bomb. Fl., 275, Vern —Chavara, chowar, Boss. Habitat.—A plant common at Mahábaleshvar, Bombay, and described | | | | | | | | | | | |
| FOOD, Rhizomes, 2429 Arrowroot, 2430 | by the late Mr. Graham. Food.—A form of ARROWROOT is said to be prepared from this plant. It is do antal it. So Coarso B adjusted and attached the last beautiful of the last be | | | | | | | | | | | |
| | the bazaars at Bombay. In 1878, a European prepared a few hundred pounds of it, and sent samples to be tited by Messrs. Treacher & Co, Philips & Co, and Kemp & Co, but it was found wanting in nutritive That | | | | | | | | | | | |
| | C. 243a | | | | | | | | | | | |

The Tikor: Turmeric,

CURCUMA longa.

"The preparation of Arrowroot at Mahabaleshvar is simple The root (of which a cooly will gather 4 or 5 large basketsful a day for as many annas) is scraped, washed, and rubbed to pulp on a grater, as mortars are found to crush the globules The pulp must then be washed no less than a dozen times at least, the sediment being stirred at each washing The dark scum on the sediment and the muddiness of the water of the first washing slowly disappear, till when the sediment is pure-white it is allowed to harden into a cake, which is afterwards reduced to powder. A basketful of roots yields 3-4 th of pure arrowroot."

243I

Curcuma leucorrhiza, Roxb., Fl. Ind , Ed. C.B.C., 10.

Vern,-Tikor, BENG 77

Habitat.-Roxburgh says this is a native of Behar. Mr. J. Glass,

FOOD. Arrowroot 2432

paration of arrowroot from this plant, "the process for obtaining the starchy substance called Tikor is as follows the root is dug up, and rubbed on a stone, or beat in a mortar, and afterwards rubbed in water with the hand, and strained through a cloth, the fecula having subsided, the water is poured off, and the Tikor (fecula) dried for use " Dr. Irvine (Mat Med. Patna) alluding to this species says its "fine amylaceous farina is equal to arrow root "

2433

C. longa, Roxb , Fl. Ind , Ed. C B.C , 11,

TURMERIC.

Vern.-Haldi, Hind; Halud, Beng, Haldar, halja, PB; Haridra,

2 U 2

sabd ghin and the Persian Zard chubah This is probably the Kuzeipos of Dioscorides U C Dutt writes that the Sanskrit haridradge or the two urmerics, signifies turmeric and the wood of Berberis asiatica. Moodeen Sheriff says that in many books Kurkum is incorrectly given to saffron, and that haridre is also wrongly given to yellow orpiment, that substance being in Sanskrit Harite lakam

References - long: Hort Sub Cal. 565, Thwastes, En Ceylon Pl., 316; Dals & Gibs, Bomb Fl., 87; Stewart, Pb Pl., 238, Mangella kua Rheade Hore Hay VI. Rumph Am Gmelin and

Mat Ind ,

Mat ina, Sherif Supp. "" in 1,0,0,0,0 to 1,1,1 at hea tima, 155,190 311 i Dymoch, Mat Med W Ind, 764 Flemme Med Pl and Drugs, arm As Res, Vol XI, 165 Flück & Hanb, Pharmacog, 638 U. Dispens, 15th Ed 1639 Bent & Trum Med Pl, 1, 269, 8 Arjan, Dispens, 15th Ed. 1629 Bent & Trim Med Pl, 4 259, S Arjun, Bomb Drugs, 1401 L L Dey, Beng Drugs, S, Murray, Pl and

CURCUMA longa.

CULTIVATION

Drugs, Sind 21, Waring, Basar Med 140; Year Book Pharm , 1873, p. 113 Medical Topog, Apmir, 136, Maxon, Burma 513 863; Mar Combatore Dist, 289, 229, and 230, Baden Powell, Pb Pr, 209 380

Condiment Form 2434 Dye Form. 2435

Habit

rhizomes It is the well-known halds universally used as a condiment with curry-stuffs and also as a dye, and is one of the most profitable of crops The dye-yielding rhizome is harder and much richer in colour than the edible. These conditions are thus special adaptations which possibly point to an ancient cultivation. At the same time, though several species of Curcuma are undoubtedly natives of India, some of which appear to have been mistaken for the true turmenc, there is little of a positive character that would justify the supposition that Curcuma longa itself is a native of India Simmonds (Tropical Agriculture, p 383) says "The Carcuma longa grows wild in the province of Mysore, and is probably indigenous to various other parts". On the other hand, Roxburgh and all botanical writers speak of it only as cultivated, and Ainalie even remarks that "The Curcuma lenga grows wild in Cochin-China, and is there called Knong huphh Loureiro gives us a long list of its medicinal virtues in lepra, jaundice, and other disorders -L 4L at It is

superseded some of the indigenous Curcumas formerly in use and which bore the names now given to this plant, just as the true arrowroot plant is rapidly displacing the indigenous or East Indian species Dalzell and

1 urmeric, see page 664)

CULTIVATION 2436 Bengal 2437

Deshi

CULTIVATION, YIELD, AND SOIL.

Bengal,—The earliest and to this day one of the most complete accounts systems "The

rerflow during the 211 1 4 400

> omber and oot The 1 publishes

teric cultine known The latter

2438

as the deshi or country, and the other as the Patna variety is of a richer colour and gives a better outturn Loamy soil, even of a very inferior quality, will grow turmeric. It can be grown in shady C. 2438

| | - |
|--|-----------|
| Turmenc. | CURCUMA |
| Tumero. | longa. |
| | , A |
| | 24. |
| •. | ~~.) |
| • • | |
| • • • • | |
| | |
| held being twice as large and 27 inches apart. Sugar-cane cuttings | . 1 |
| are very lightly covered with earth, over 6 inches of earth is placed or | |
| are very lightly covered with earth; over 6 inches of earth is placed or the turmeric cuttings. The usual planting time is the first week of | Mature. |
| Jaistya," that is, about the 20th of May. "The plants spring up in about | 2440 |
| a fortnight One or two weedings are necessary, and care must be taken | 11 -110 |
| that the fields are not inundated In some parts of Bengal it is no | 1 |
| considered good practice to lift the plants the first year. On the setting in of the following rains new shoots appear and the plants are tended | [] |
| exactly as in the first year. 'After about a year and nine months tur- | :1 |
| meric is lifted. When it is raised the first year, as is the practice in some | • 1 |
| places, the produce is less in quantity and inferior in quality." The Director of Agriculture, Bengal, has the following estimate of the cost of | <u> </u> |
| Director of Agriculture, Bengal, has the following estimate of the cost of cultivation: | [] |
| |) |
| 6 Ploughings 2 4 0 | 1 |
| 3 maunds of seed at R a | 1 |
| Planting, 8 men at 4 annas a day 2 0 0 To earth up four times 4 0 0 | 1 |
| rour weedings, 3 men at a time | |
| To die out 6 men | |
| 10 Clean, 3 men | 1 |
| | 1 |
| To dry, 8 men 2 0 0 Earthen pots 1 0 0 | i |
| Rent | 1 |
| TOTAL 32 0 0 | 1 |
| TOTAL . 32 0 0 | 1 |
| It is not stated whether the calcanatate is a | BENGAL |
| the latter being a thi | 2441 |
| able. Dr. McCann extensive series of | • • • |
| connection with the | |
| statements are made lurmeric is planted in Rajshahl in March to | Seesan |
| April and dup ting tear later in Saran act at 1 = _ 1 | Degadi di |
| August, | |
| varies f In Hug | |
| R4-9 | |
| | |
| f contract the second s | |
| | } |
| general | N. W. P. |
| Kumao | 2445 |
| importa . | |
| grown . | |
| ·* , | |
| | |
| | |
| C, 2445 | |
| | |

| URCUMA longa. | Turmeric |
|---|---|
| N W P Cost, 2446 | pakin tit annua of anni Pakin an Dalamahatawa t |
| 2447 | ery |
| | the und small d, one |
| Į | have rains up in |
| BOMBAY. 2448 Yleid. 2449 | January" |
| Lokhandi 2450 Aromatic. 2451 PANJAB 2452 | Panjab —It is not apparently very extensively grown in the Panjab, at |
| l | · · |
| 2453 | |
| 2454 | turmers for the consumption of the whole district." The Garagees further states that in the Kangra District there were, in 1830-81, 1,621 |
| madras, 2455 | acres under this crop and in 1881-82, 1,520 acres Madras - Turmeric cultivation is alluded to in various publications regarding South India, but no article has been found that deals with the Presidency collectively Of Combatore it is stated that it augustly grown as a mixed crop with yams, matric, castor, bringing and heavy "The soil is thoroughly prepared by repeated a favourite manure, manuring, municipal soil having been ridged up about 2 feet apart, the rhitomes are planted, a cultor feets from one another, on the ridges and thereafter watered every three or four days until the end of December, thenceforward somewhat less often till March and April, when they dug up The crop is hoed and weeded several times in the first worth. |

Turmeric

CURCUMA longa.

sides of the ridges, the others in lines around, and through the area so as to define, shade, and in some over protect the crop." It is explained that in some parts of the district less watering is required, and that as a rule turner is not grown more than once in three years and is followed by régi and paddy. "The seed required is from 500 to 500 measures, and the outturn of prepared turneric, from 3000 to 50000h, value to the ryot Rizo to R200. To this must be added the value of the other crops, which is very considerable, jams tine! [e-style kilange or Caladium nym-phasifolium) will yield 350 mainds of 25th each, worth 12 annas per maund Probably when these two crops are grown together the yield of each is much less. The expense of cultivation, if the labour be charged for as hired, will be something as follows:—

CULTIVA-TION. MADRAS.

Return. 2456

Cost. 2457

| " When | | | •• | 1 .1 | | 76 | | | -11 | Pr. | | ٠: ٠٠ |
|---------------------------------|--------|----|----|------|---|----|----|-----|-----|-----|----|-------|
| | | | | | | | To | TAL | ٠. | 116 | 8 | 0 |
| Assessment | • | ٠ | • | • | ٠ | • | • | • | ٠. | -1 | 8 | • |
| Seed cuttings | | ٠ | | | • | | | | ٠ | 25 | 0 | 0 |
| Sizing and pro Seed cuttings | eparıı | ng | | | | | | | • | 14 | 0 | 0 |
| | | | | | | | | | | 6 | 0 | 0 |
| | | | | | | | | | | 40 | 0 | 0 |
| | | | | | | | | | | 14 | 0 | o |
| 10.3 1- | | | | | | | | | | 3 | 0 | O |
| Six ploughing | s | | : | | | | | | | 3 | 0 | 0 |
| Manure . | | | | | | | | | | 10 | 0 | 0 |
| | | | | | | | | | | R | a. | p. |

2458

to him was little besides manure and seeds; but the value of the crop could not have been much under RISO, and was possibly more."

PREPARATOIN OF THE RHIZOME.

Various systems are apparently practised for preparing the rhizome for the market. Of Bengal it has been said:—"After the rhizomes have been dug out of the ground, they are freed from the fibrour roots and clear."

PREPARA-TION. 2450 BENGAL. 2460

> N. W P. 2461

at accortion is then made of this paste in water, in which the cloud is wen steeped, being subsequently dried in the shade. In the Kumaon district

CURCUMA longa.

Turmeric.

PREPARA-TION. PANJAB. 2462 MADRAS. 2463 the roots are scaked in Imme juice and borav before being powdered instead of being boiled." Of the Panjah, Mr. Baden Powells says the tubers are taken up in November and dired partly by the action of fire and partly by exposure to the sun. Of Combatore it is reported: The roots are carefully sized and separately boiled in a mixture of cox-dung and water, dired and sent to market."

AREA HNDER TURMERIC.

AREA. 2464

Acres.
Bengal (according to Dr. McOann) perhaps 30,000
Madras 55,000

TRADE. 2465

TRADE IN TURMERIC.

6,000

2 000

3,500

55,500

Regarding the Indian Foreign trade in this article Mr. O'Conor, in his Review of the Trade in 1873-77, wrote "Turmeric was exported to the value of too lakks of rupees, the quantity being 12,822 cxt. This article has hitherto been recorded in the returns under the heading Spices, but it is more appropriately classed as a djeing material It is not really a spice but rather a condiment, and for this purpose

Foreign. 2466 portance in 1881-82 the exports were 70,783 cwt, valued at R3,66,047, as compared with 1877-78, when they amounted to R12,40,189 in 1855-86 the trade had so far recovered itself that the exports amounted to 156,287 cwt, valued at close on 11 lakhs of rupees. Last year they amounted to

Internal. 2467 140.091 cnt., valued at Rio, 22.02
Full particulars cannot be learned as to the extent of the internal trade, but it must be very extensive, and even a trans-frontier trade exists. Kashmir receives a considerable amount. The various Indian ports last year exchanged 281,117 cnt. of turneric valued at R44,83.200.

HISTORY 2468

HISTORY OF TURNERIC

Turmenc yields a yellow dye of a fleeting character, which formerly was far more extensively employed by the natives of India than at the present day. Its chief features that recommended it for decorative purposes at marriage ceremones, &c., were cheapsens, case of reparation, and facility of being removed. But these are conductively more readily attained by aniline colours, while glaringly brilliant results are obtained, and, consequently, even relig ous injunctions have

| Turmeric, | CURCUMA longa. |
|--|-----------------------------------|
| to a certain extent given place to the encroachments of the tar dyes. Writing of this subject Dr. McConn (in his Dyes and Tans of Bengal, p. 85), says: "Formerly on festive occasions an infusion of turmeric | HISTORY. |
| | Wedding Garments. 2409 |
| | J |
| ing off the evil eye. all the body with it as | Cosmetic. 2470 |
| n the sect of Visnou make the peculiar | Markings on Foreheads. 2471 |
| t Provinces, says: | Dye Fleeting. 2472 |
| | |
| the rendered permanent as a dye." It is somewhat remarkable that John Hughen Van Linschoten, who spent several years on the Malabar coast from about the date of 1506, should describe the rates of people he met with, going into every detail as to their social habits, domestic and the discribes Carlos Ca | |
| chutney makes no mention of the habit of eating turmeric or of dyeing | |
| | |
| | |
| numble by mere verbal descriptions. The principal sorts now in commerce | 1 |

CURCUMA Tarmeric. longa. HISTORY. Cochin the trade of Lochin, makes no mention of Turmeric, but at the same time Doubtfully True Turreferences occur, of turmeric as employed in Europe about the time of which I Incabet meric 2473 were and been and a property of the latter substance is horny and of a deep orange-brown, or when in thin shavings of a brilbant yellow Mr A Forbes Scaly of Cochin has been good enough to send us (1873) living rhizomes of this Curcuma, which he states is mostly grown at Alnaye, north east of Cochin, and is never used in the

country as turmeric, though its starchy tubers are employed for making TURMERIC DYR

(Conf with C angustifolia and other sources of East India

Dye -It has already been stated that a special form of turmeric is grown for this purpose, namely, a harder root, much richer in the dye principle than in the ordinary condiment form. This dye rhizone receives separate names in the various provinces of India, but is most generally known by the name lok hand, halads, other dye forms are as mala-halds, jowala-halds, and ambi-halds Under the paragraph, above devoted to an account of the preparation of the tuber, mention has also been made of the further process which the dyer has to adopt in ----- L

The colour is only deposited in the rhizome with age, and hence, in all probability, the above mentioned forms have been obtained by a process of careful selection of stock observed to produce the colour freely is of importance, however, that the European merchant, in purchasing for dye purposes, should see that he gets the hard dye-yielding form and not the softer aromatic condition which is used as a condiment. Although, of course, turmeric is still employed by itself as a simple and cheap dye, its more general use at the present day in India, is as an auxiliary to other dyes and in Calico printing It is also used to some extent to impart a colour to native-made paper. Mordants are but rarely required with the dye, as it is found to attach itself readily enough to wool, silk, or cotton. Alkalies deepen the colour, making Alum is said to purify the colour and to destroy all it almost red The dyers of Calcutta produce a brilliant yellow, known shades of red (Carbonate of Soda)

this process "Here tint, produced always is are sometimes em-

ployed with turmeric, but the chief compound colour in which turmeric plays an important part is the green shades formed along with indigo The fabric is first dyed with indigo and then dipped in a solution of hald! Turmeric is also often added to sharpen or brighten other colours, 25, for example, Singrahar (Nyctanthes arbortristis), lac dye, al (Morinda tinctoria), safflower (Carthamus tinctorius), and toon (Cedrela Toona). C. 2477

DYE 2474 Dye-Yielding Rhizomes. 2475

arrowroot)

Yellow. 2476

Green. 2477

| • | |
|--|--|
| Tutmetic. | CURCUM longa. |
| The Indian Calico-printers use turmenc by preparing a mixture of "4 gallons of water containing pomegranate find and alum in the following proportions:—Turmerer 5th, pomegranate ind 2th, and alum #b The compound is left to stand for a night, the surface water strained off, and #b of indigo added. It is then prepared for use by being thickness with gum, clarified butter, and flour in the usual way The colour is greenish; ellow and is flecting." (Buck, Dyes and Tans of N-BY, P., 555) | 5 WILLIAM |
| The thizome is a life of the third that the saline industries in the saline industry, very lugitive char. | EUROPEAN USES. 2479 |
| all he sta | ' |
| • • • • | Cotton. |
| | 2480 |
| | Wool, 2481 |
| | |
| and the second second | 50k. 2482 |
| | |
| gretate of land in the second terms of eater model to file a self- | I |
| | Curcumin. 2483 |
| Daner hace vice has a finder that the find once of the house a suid new | I |
| | |
| | |
| | |
| imin, and the a new body n. The sub- | Action of Boracle Acid. Red color. 2484 |
| t with pure is draed, and and i part of s on cooling By pseudo | Rosocyanin. 2485 |
| C. 2485 | -4-5 |

CHECHIMA

Turmeric

longs. EUROPEAN USES

curcumin is understood the organic resinoid substance resulting from the

Blue Color 2486

prolonged action of water upon boro-curcumin, just above-mentioned The reser and a feet of and and the state

> nia turns the alcoolouration changes niacal solution red

Colonyation of Flowers. Cvanin. 2487

the alcoholic solusevanin (also called

roscocyanin) and pseudo-curcumin are unknown, neither was, until July,

alkalies. If this suggestion proves correct, on more precise investigation turmeric could become a useful source of preparation of the red colouring matter of flowers, which it is very difficult to obtain by direct extraction All or ach a am

back the id dveing

Printing 2488 Sour Browns 2480 MEDICINE. 2190

at is now employed to a vast extent in sign-dyeing, forming an important constituent in certain compound colours, especially the socalled " sour browns."

parasitic mediciin affec-" "The

ise of a decoction of turmeric in purulent conjunctivitis, he says it is very effectual in relieving the pain. In coryza he states that the fumes of burn-

Special Opinions —§ "The root, parched and powdered, is given in bignonity in The smoke produced by sprinkling powdered kilds over burnt charcoal will relieve scorpion sting when the part affected is exposed to the smoke for a few minutes. A past and according to the smoke for a few minutes. rhizome is applied on the head in cases of vertigo Fresh juice is cooling Fumes of burning root is employed during hysteric fits" (Assistant

Turmeric; Long and Round Zedoary

CURCUMA Zedoaria.

MEDICINE.

powdered root is used as a fumigation in commencing catarrhs inhalation is generally taken at night and no fluid is allowed for some hours afterwards The effect is said to be in many cases a complete cure

and is used for colouring confections. &c.

Chemistry of Turmenc -Dr Dymock gives a brief sketch of the chemical history of this subject which should be consulted "Curcumin, the yellow colouring matter of turmeric, has been examined by several chemists, whose experiments have led to the conclusion that its formula is either C10H10O2 or C16H16O4, that it melts at 172°, forms red brown

FOOD. Condiment, 240I Curry Powder.

Curcuma pseudo-montana, Graham

Vern —Sınderwanı, зıнdегбиғ, sındelwan, hellounda, Вомв

Habitat - Said to be a native of the Konkan, springing up at the beginning of the rains

Food -"The tubers, which are perfectly white inside, are boiled and eaten by the people during seasons of scarcity Perhaps this plant, too, yields a part of East India arrowroot, that which comes from Ratnagiri is manufactured from its tubers" (Lisboa , Dals and Gibs).

C. rubescens, Roxò

Habitat.-" A native of Bengal, flowering time in the months of April and May, soon after which the leaves appear, and decay about the beginning of the cool season, in November. Every part has a strong but pleasant aromatic smell when bruised, particularly the root " (Rozb) Food.—Roxburgh and Voigt say the pendulous tubers of this species

yield a form of arrowroot C. Zedoaria, Roscoe (non-Roxb); Wight, Ic, 1. 2005.

THE LONG AND THE ROUND ZEDOARY.

Syn -C ZERUMBET, ROZO

C. 2499

2402 HEMISTRY. 2493

2404

FOOD Rhizomes. 2495 Arrowroot 2406

2497

FOOD. 2498 2499

2503

C. 2503

CURCUMA Long and Round Zedoary. Zedoaria Vern - Kachura, HIND : Satt, thert, kachura, Beng,: Satt, karch Sins 1 Zurambad, Akabit hashir, urikelekifir, Pena . Kach BOME: A raddala. hickonna N Fleming, A References -27 11 Rheeds 131 : Mat 771, 4 U 5 Pl and I, 159 Ind., Birdwood, Bomb Pr , 87 ; Balfour, Cyclop , 859 ; Kew Off Guide to Mus of Ec Bot . 62 Habitat -Roxburgh says it is a native of Chittagong, from which of ARIE. 2500 reversed the scientific names of the species of Curcuma The Shati he territor in scientific names of the species of Curtum an of the past forty years, been regarded as C. Zedoana, Roses, wh Dr McCann gives it as C. Zetumbet, Linn, —a name which does not exist no botanical literature. If he means C. Zerumbet, Roeb, not Linn a synonym for C Zedoana, Roeso) it is unfortunite he did not public synonym for C Zedoana, Roeso) it is unfortunite he did not public. his economic information under the modern name, since the nam 250I solc The 10 c composition. In Beneral the requestories of C. Zednaria Zedoary. 2502 MEDICINE Rhizomes

| Long and Round Zedoary; the Dodder | cuscut reflexa, |
|---|------------------------------------|
| properties Employed in native practice as a stomachic, and also applied to bruses and sprains "The native schew the root to correct a sticky taste | MEDICINE. |
| • | |
| | ı |
| | |
| Special Opinions — 4 "The thirome of this plant is the Amba-halds of the Bombay bazar Bruised with alum in water, it is applied to thrusted joints and other parts to remove echinoses" (Assistant Surgeon Sakharam Arjun Racat, L. H., Grgaum, Bombay) "Small bits of the thiromes are put in the mouth and chewed to allay cough" (Assistant Surgeon Sakharam Arjun Racat, L. H., Grgaum, Bombay) "Demulent, expectorant, and aromatic, dose about 1 drachim" (Cutil Surgeon Fohn McConaghty), M.D., Skahjahanpore) "The rhirome is considered to be a cooling medicine, also tome and expectorant" (Surgeon-Hajor J. H. Houton, Durbar Phism, Travancert, and Giril Apoth. John Gomez It is used as an odoriferous ingredient of the cosmetics used for the cure of chrone skin diseases and internally as a mild aromatic simulant in fever and coids" (Assistant Surgeon Sakharam Arjun Ravot, L. H., and colled by the Bhotes Pasiba. | Judwar of Yarkand. 2504 |
| | |
| | |
| Linn, are A 430 Perfunerty—The rhizomes of this plant constitute one of the most important articles of native perfunery Trade—Dymock says the Bombay supply comes from Ceylon, value R20 to R30 per candy of 7 cwt; as already stated, Roxburgh affirms that Bengal gets its supply from Chittagong | PERFUMERY 2505 TRADE 2506 |
| Curcuma Zerumbet, Roscoe (non Roxb) | 2507 |
| The writer is unable to isolate the economic facts recorded by certain authors under this name from those given for Curcuma Zedoaria, and he suspects that all refer to one and the same plant, or to Roxburgh's Zingiber Zerumbet | |
| CUSCUTA, Linn , Gen Pl., II , 881. | 1 |
| Cuscuta reflexa, Roxb; Fl Br. Ind, IV., 225, CONVOLVULACEE | 2508 |
| THE DODDER | |
| Syn — C grandiflora, Wall ; C. verucosa, Sweel, C. macrantha, Don Ve- | 1 |
| | |

CUSCUTA reflexa.

The Dodder or Cuscuta.

Some confusion exists regarding the vernacular names given to the species of Cuscuta. Dymock describes three species two of which he has not determined botanically: he gives Addraeti as the local Bombay name for C.

in the Western Himálaya, growing on the spiny plant—Prinsepia utilis. ROxburgh, who first described that species, states that it was found growing on Crotalanta juncea. The Flora of British India youly remarks that it as purile to know where Roxburgh found it since the species, as known to medicare botanests, does not occur much below 6,000 refer. It is distributed from Smith to Kashure, Belon sina and Algkinstan. Hord-and the state of the sta

C. planifora, Fenore, and C. reflexa, the dkdsel, aftimun, karás.

Habitat.—An extensive parasitic climber, making the trees quite hoary upon which it occurs, often growing to such an extent as to completely cover every bough and leaf. It occurs throughout the planis of India and

ascends the Himálaya to about 8,000 feet

Dye.—Mr Baden Powell states that at Jhelam this plant is sometimes used as a dye. It would be a great matter if it could be utilised in this manner, as many trees are often completely covered and often killed by the plant. The dye is apparently unknown in Bengal. Mr. Baden Powell does not mention the color, it is probably a yellow. Drury says it is

MEDICINE Plant 2510

DYE.

2500

Seeds. 25II

Stems. 2512 Dymock says of the Persan dodder-Affinum-that it "has a bitte taste, in Arabic and Persan works it is described as the Affinum of the Greeks, which had so great a reputation as a remedy in melancholy madness; it is still a medicine of importance with the haking of India, and the Affinum of India, and the Affinum of India, and the Affinum of India, and India and In

anon

FODDER. 2513

"Edgeworth mentions that the mountaineers believe that crows pluck sprigs of this to drop into water, when they become snakes, and so furnish food for them."

C. 2513

2514

FOOD

Vegetable. 2516

Horse-food.

CVAMOPSIS The Guar. psoralioides. Cus-cus (khus-khus), see Andropogen muricatus, A. 1097. Cuscus seeds, see Papaver somniferum Cusparia or Angustura bark, see Galipea Cusparia, St. Hil., Rubiace E. Custard Apple, see Anona squamosa, A. 1166.

Cutch, see Acacia Catechu, A. 135-

Cuttle-fish, see Molusca.

CYAMOPSIS, DC.; Gen Pl., I, 493.

Cyamopsis psoralioides, DC; Fl Br. Ind, 11, 92, Leguminosa

Vern. - Guar, dararhi kuwara, kauri, syansundari, phaligawar, kachhur, thurts, khults, N-W P. and Oudh, Guwar, Gul, Gaues, muths, gawar, BOMB., Buru raher, SANTAL, Pas pason, BURM. (Kurs, Pegu Rept.)

Habitat.—Cultivated in many parts of India from the Himálayas to the Western Peninsula. It is a robust erect annual, 2 to 3 feet high, grown as a rainy season crop.

Cultivation. - In the Bombay Gazetteer (Gujarat) it is said to be grown as gn and it

CULTIVA-2515

different purposes,-as a vegetable for human consumption, and as a pulse for horses and cattle. For the former purpose it is invariably grown on highly manured land near villages, and assumes a much more luxuriant habit of growth than when grown for cattle The portion eaten as a vegetable is the pod, which is plucked while green, after the fashion followed with the French beans of English gardens. As a cattle fodder it

ZS17 2518 FODDER, is grown for its grain and is then sown on light sandy soil, side by side 2510 and often m -, 3

stri catt +- -

in Latehpur and Allahabad The value of a purchased animal is

•••

| CYANOTIS tuberosa. | The Spider worts |
|--------------------|---|
| | noticed. It occupies there more than ten times as large an area as in any other Division. The cultivation of guar also reaches its maximum in the same tract, and its an indication of the care of agricultural stock which one |
| | the Panjab proper which exhibits a sample, the pulse is stated by the |

CYANANTHUS, Wall; Gen Pl, II 557

Cyananthus, sp. (? C tonifolius, Wall), Fl Br. Ind, 1111, 434,

Itsaka (Lisboa), Bomb

Habitat—' A plant with pretty blue flowers, growing at 10 000 to
20 00 feet in Chumba "
Medicine —' The calyces are eaten, being mawkish sweet, and are
said to be good for asthma " (Streart, P. B. P.)

MEDICINE 2521

CYANOTIS, Don , Gen Pl, III, 851, Wight, Ic, t. 2082 & 2089

Cyanotis axillaris, Ram et Schultes, DC, Mono Phan, III, 244, Clarkes Commelinacea, table 35, Commelinacea

One of the Spider Worts
Vern — Nurpi II: (Rheede), TAM , Soltrat, bagha-nulla (Ains) e),Hind

MEDICINE 2523 Habitat —A herbaceous annual, met with in many parts of India, distributed to the Malay, China and Australia Medicine —Rheede says that on the Malabar coast this is viewed as a

FAMINE FOOD Seeds 2524 2525

of the as also of Commelian communis, were eagerly sought for during the Bombay famme, they are wholesome and nutritious

C tuberosa, Ram & Schullet, DC, Monogr Phan, III 249

Syn — Transscawith Tuberosa Rark C Additional Dale in Hock Jour Bot 9 38 (1852), C Sankertosa, Wight 1c, 267

MEDICINE Root 2526 FOOD Leaves 2527 Vern — Mero n chuncht (a name g ven from the resemblance of the roots to the pap like of the goat) Hodo pereng arak (the vegetable) SANTAL Medicine — I he Rev A Campbell says the ROOT is given in long continued fevers and also for worms in cattle

Food —The LEAVES are caten by the Santals as a pot herb C. 2527

| Seir Fish, Cycas or Sago Plant | CYCAS Rumphii |
|---|-----------------------------------|
| CYBIUM, Cu., Day, Fishes of Ind, 254 | 1 |
| Cybium Commersonii, Cur. & Val | 2528 |
| Vern.—Sermon's, Hinn lungurrum (male) koram (female), Tel, konam, mah-mu luachi ot ah ku lah, Tam, Chumbum, Mal. Habit. | |
| Medic mended. | MEDICINE. |
| Quart 1 taste of to putnis | 2529 |
| 1 - my | İ |
| CYCAS, Linn , Gen Pl , III , 444 | 2530 |
| The br of not ces here given of the species of CYCAS will be found supplemented under Sigo. This has been rendered necessary, from its being often discust to discover to all ich plant the earlier we teer select | |
| Cycas circinalis, Linn , DC Prod AVI, II, 526 , CYCIDICEE | 2531 |
| Syn — C Sphierica, Rosb, Fl Int Ed C B C, 769, C circinalis, Linn in Thraites En Ceston Pl, 291, Todder Panna, Rheede, Hort Wal III 9 | |
| Verm—Orasmaro Unith Maddd, Sing Under Cycas circinalis, Linn, Ainslie gives the following names which all appear to refer to Sago and rot necessarily to Cyclas —Show arisi, Tam, Sawile chawle, Dux, Sebudana Ilind, Zewbum, Tet, Sagu, Mal, Schuhme, Sing, Sagu, Java, Sagu, Bati, (Mal Ind I, 361) | |
| Habitat —A palm-like tree met with on the mountains of the Malabar coast and in Ceylon | |
| a . 1 d food at mas of | FOOD, Seeds. 2532 Flour. |
| C. pectinata, Griff as in Kurz, For Fl Burm , 503 | 2533 2534 |
| Vern.—T/atal Nepal | 2534 |
| Habitat —An evergreen simple-stemmed palm like tree, found in Sikkim, Eastern Bengal, and Burma, often in sal or eng or pine forests (Gamble) | |
| L h h the fr to c eaten by the | FOOD |
| • vedge-shaped white ti-sue, | 2535 TIMBER 2536 |
| C. revoluta, Thunb | 2537 |
| Often called the SAGO PALM OF JAPAN AND CHINA Habitat —A Japanese species often cultivated in India, has a short thick stem | 50. |
| C. Rumphu, Meq , Gamble, Men Temb , 415 | 2538 |
| Syn -C CIRCINALIS Roxb . E I C B C . 700 | -550 |
| . Vern - Hara gudu, Tel., Tod to maram, Mal.; Mondane, Blan. 222 | |

| 670 | Dictionary of the Leonomic |
|--|--|
| CYDONIA vulgaris | Cycas, Quince |
| | Habitat -A palm like tree with a simple or branched stem, abundant in t |
| RESIN 2530 | Isin (Kurs) nant vicers, and |
| MEDICINE 2540 Scales 2541 FOOD Sago | that it excites supportation in an increa by short time. Spead Opinion—§ "The scales of the cone of the male tree anodyne, dose to to 60 grains or more" (Apothee iry Thomas Wird, Madanapalle, Cuiddapah). Food—The interior of the stem yields a good quality of sago or strich, the nutty seeds are in Ceylon mode into flour, but they are also strich, the nutty seeds are in Ceylon mode into flour, but they are also |
| 2542 Seeds 2543 | eaten by the hill tribes of India |
| 2544 | Cycas siamensis, Miq, Kurz, Burm For. Fl, II, 503 Habitat—An evergreen, low, stemless palm-like tree frequent in the eng and dry forests of the Prome district. Burms |
| resin 2545 | Resia — Exudes a peculiar whitish gum, like tragacanth (Aurs) |
| | CYDONIA, Tourn (Pyrus, Linn), Gen Pl, I, 626 |
| 2546 | Cydonia vulgaris, Pers., Fl Br Ind., 11, 368, Rosacer. The Quince |
| | Syn —Pyrus Cydonia, Linn |
| | Vern — Bihi (ab), accord og to Aingle), Hivo – Bam tientil, bansulu Massing, Shman ma falavera – Tan , Bh tiench 30/2012 hand Massing, Shman ma falavera – Tan , Ban tientil 30/2012 hand Massing of the Shman – Bihi danah beh-danah tihihmedil 1928 – Hobbus on Japan kan a Bihi danah beh-danah tahlamedil 1928 – Beh dajanah Hivo Duk, Shimai madalas uyran, Tan , Shime-dali wa biya Sika , Shime-dalimba-teli tu, Tet |
| | References — Brandis For FI PP 17 80, DC, Ories Cu Pharm Ind, 211, Avidis I Fharm Ind, 211, Dymork J O' Trym Ned 171, 100 Mat Med Palm 10, 101, 100 U Pl Bomb 119, Birthoo XI (Q mice such and and and are for first for the first for the first for the first for the first form of the f |
| | Habitat — Cultrated in Afghänistan and the North West Himflina up to goof eet. DeCandolle sigs it grows wid in the woods in the north of Persa, need to such a feet of the such as the such and the such as the su |
| | quince, and for the wild plant armud Tle names in use in Europe po at to an ancient kno ledge of the species to the west of its or gard country peCandolle adds that it may have been naturalized in Lurope before the analysis of the state of the second country of th |
| 9547 | in the state of th |
| medicine Seed 2548 | Hills the ground at certain seasons roting under it e trees. This might use and probably is a substitute for quince. Medicine—Ainst e says.—The little of this article which is found in Indian batars is chiefly in use amongst the Muhammadan practitioners, C. 2548. |

| Quince | CYDON |
|--|---------|
| who occasionally order an infusion or decoction of the SFFDS as a demul- | MEDICIN |
| • • • • • | l |
| | |
| | |
| Annual Control of the | Fruit |
| tome, tephane, and EUDS, and BARK of | 2549 |
| account of their astri | Bark. |
| mo <t, <li="" and="">lightly a</t,> | 2550 |
| plaints as a demul | Muchage |
| blisters" (D) mock) | 2551 |
| author:-"The seed | |
| corresponds in composition with that of finseed " | 1 |
| The seeds coagulate 40 times their weight of water (Pharmacographia) Special Opinions - 5 "A cold infusion of the seeds forms a pleasant | ļ |
| demulcent drink, which is much used in native practice in cases of irrita- | |
| tion of the urinary organs" / for to 10. | , |
| "I use it as a de | |
| about one drachm are known here as | |
| plaints and semir | |
| Ahmedabad). Qu | |
| t demulcent | } |
| of diarrhœa | 1 |
| . 'ly juicy and | |
| rdone is also made into preserve, and, as having a powerful | FOOD. |
| odour, is often used to flavour marmalade and other preserves. Wine is sometimes made from it. It is supposed by some to have been the | Fruit. |
| Coulen Fruit of the Hesperides | 2552 |
| cially near Naggar), and the fruit is | |
| j" , · | |
| N . | |
| and a new around on the same on absolute term to a first to | 1 |
| seed are largely imported into the fruit is eaten fresh, candiec | |
| istan excels all other nunces | |
| no other fruit of remarkable or | i |
| Flora makes an | |
| the | TRADE. |
| of some according to quality. Moodeen Sherift points out that Beh. | 2553 |
| danah and Bi-danah are so much alike in sound that mistakes are likely to be made. The latter is the name for a peculiar seedless raisin but | |
| is often loosely applied to all raisins. | |
| | |
| Cymbopogon, see Andropogon; GRAMINEE. | |
| C. citratum, DC., see Andropogon citratus, DC, A. 1079 | |
| C. laniger, Desf., see Andropogon laniger, Desf.; A 1093 | |
| C. Martini, Roxb.; Munro, see Andropogon Schoenanthus, Linn.; A. | |
| 1117 | |

C. 2553

678

| • | |
|------------------------|--|
| CYNODON Dactylon | Artichoke, Doorwa Grass |
| | Cymbopogon Nardus, Linn, see Andropogon Nardus, Linn, A. 1107 |
| 2554 | CYNANCHUM, Linn, Gen Pl 762 |
| | [354, Asclepiadeze Cynanchum pauciflorum, Br , Fl Br Ind IV, 23, Wight, Ic |
| | Syn — Asclepias tunicata Roth Fi I id Ed CB C, 253 Cynan chum Pucifichum R Br in Dala & Gibs Bomb Fi 148 Cynoco tonum paucifichum Deed ie Thwaite E Ceylo: Pl 155 Vetn — Chaqui pati Beng Kan humbala Sino |
| FOOD Leaves 2555 | Habitat —A large twining shrub met with in the Deccan Pennsula from the Concan southwards to Travincere and Ceylon This is the region given in the Flora of British India, but according to Roxburgh (Asclepas tunicata), it is found in Bengal also. Food —The Cinghalese cat the young leaves of this and of many other plants of this natural family, in their curries (Enumeratio Plantarus Zeylauca, 195) This does not appear to be the case in Bengal, Roxburgh simply remarking that its milky juice is particularly gummy |
| ' | CYNARA, Linn ; Gen Pl., II, 469 |
| 2556 | Cynara Scolymus, Linn , Composite ARTICHOKE |
| | an an |
| гоор 2557 | Habitat —Cultivated to a limited extent over most parts of India for the European market Food —The lower parts of the thick imbricated scales of the flower-fleshy are eaten to a catchoke in minger says it is than in English |
| | suitable days be plac art chok, from the tithe begs |
| | CYNODON, Pers , Gen Pl , III 1164 |
| 2558 | Cynodon Dactylon, Pers Duthie Fodder Grasset N Ind, 52, CREETING TANIC GRASS OF DOORN'S, COUCH GRISS Syn — C STRILATUS Built; PANICUM DICTION LIN PASPALUM DUCTION DE DICTIANA DACTION Sep Vem —D & daura d bra kabbar khabbal talla tilla Pa B reva TRANS INDUS, Dob mill dub, RAJ, Chibbar Sind, Dub, darbh, dabbh, C. 2558 |

Dub or Doorwa Grass

CYNODON dactylon.

BENG Dhobs ghás Santal, Duba, kali ghas, rim ghis, NWP, Dhipsa harish CP, Durca, Sans, Durca, karala, harieli, Mar, Arugam pila, harieli, Tam, Ghericha, laryali (Upper Godaveri), Thi

Mr Radan Dojali -- -- 1 stastaf 1 --

December 19 and

Smith, Dic , 157

Wi DL

Habitat — A perennial 'creeping grass and flowering all the year round, grous every where throughout India, except perhaps in the sandy parts of Western Panjab, where it is rare. In winter it appears scanty, at which time it may be said to be at rest. It abounds in the Sunderbuns. It is particularly abundant on rood sides, ture of sand and gravel which it there. It is readily propagated by chopping.

pieces over the prepared soil. It as:
of 7,000 to 8,000 feet. It warres considerably both in habit and nutritive
qualities, according to the nature of the soil or climate. It makes good
hay keeping for several years if carefully stacked

way keeping for several years to reterilly stacked. "May Dúrba, which rose from the water of life, which has a hundred roots and a hundred stems, efface a hundred or my sins, and prolong my existence on earth stacked years. "It was been stacked years to Durbu says." This elegant and most useful vegetable has a make in the temple of the fundure legan. Medicinally, the face."

Hay 2559 MEDICINE, 2560

G
G
Chief mourner wearing a ring of the grass. The latter is sacred to Ganesh
Both grasses are indiscriminately used in compound prescriptions with

2561

Indies, caused by Pulex penetrans "

Julee, 2562

| CYNODON Dactylon. | Dub or Doorwa Grass. | |
|----------------------|---|------------|
| MEDICINE, | | • |
| | | |
| | | |
| | tay 11 | nes er- |
| F00D. 2563 | n t roots. It is the most common and useful grass in India, and its stee | he |

F00D. 2563 F0DDER. 2561

roots. It is the most common and useful grass in India, and it stems as well as its roots form a large proportion of the food of our horses and dows. Mr. Duthle says it varies considerably both in habit and nutritine qualities, according to the nature of the soil or climate. It makes excellent hay and will keep for years. It is by lar "the most useful of all fodder grasses, especially for horses." It is considered to be a first class fodder grass in Australia, where it is widely distributed,

2565

honever, must process, consider aute mutines quantures, on puot sons its hable to be crushed out by inferior types of plants, but on those of fair quality it is very persistent and difficult to eradicate, the latter point is detrimental to it is use as a crop to be taken in a rotation. When highly culturated it yields beavily under irrigation and is grown for hay mear some large stations. In 1868 there was a plot of this grass on the

The following system is recommended for putting down this grass :—
"The land having been well cleaned should receive a dressing of foldyard manure: when ploughing in the manure a woman should follow each

CYNOGLOSSIIM micranthum.

The Cynoglossum or Dog's tongue

Regarding the curing of hav the following remarks with reference to

this grass are of value -"Harril, like most other mendow grasses, should be cut immediately the flower begins to appear, in this state the juices of the grass are more nutritious, and the has is far superior than when made from the fully matured plant Besides when cut before the seed appears, the plant is more vigorous and produces another crop much sooner Hariali hay is Tenerall coal d

FODDER. Hay. 2566

or at the most three days, should suffice for making the hay.

"Cutting should not commence until the dew is off the grass grass should remain on the ground for an hour or so after being cut should then be turned and tossed until sun-set It cannot be tossed too much during a hot sun. To preserve the green colour and aroma of the hay it is absolutely necessary to keep it moving. At night, if the dews are heavy, it should be put up in small cocks, each containing from two to three colours.

2567

of course putting it again into cock at night

"Hay thus rapidly made is rich in saccharine matters, and is, therefore, very liable to heat and ferment, this, to a moderate extent, does

cat abundance, and is of a superior stuard, it grows luxuriantly in the avers in the southern division, and The junce of the leaves is use ! (Topography of Dacca by 7, 11)

34/8

lor. 60)

CYNOGLOSSUM, Linn; Gen Pl, II, 848 Cynoglossum micranthum, Desf., Fl Br Ind, 11', 1561 Vern - Nilakras, PB , Oudhuphull, Gu] , Adhopushel, Eles | f + f.// henda, Sing

4.111

C. 2911

| YPERUS | Cynometra, Cyperus |
|--|---|
| DYE 2570 MEDICINE 2571 | Habitat — Nature in North India and the Himfilaya, altitude 1,000 to 8 000 feet, from Kashmír to Bhutan and Pegu, common Several spec es of closely allied plants belonging to this genus are occasionally mentioned by authors as of economic value. It is doubtful how fir they have been distinguished. O Shaughnessy says C. officinale (1) yields a colouring matter of little value. Medicine —The plant is officinal in the Panjáb |
| | CYNOMETRA, Linn , Gen Pl , I , 586 |
| 2572 | Cynometra cauliflora, Linn , Il Br Ind , II , 268 , LEGUMINOSE. |
| oil. 2573 2574 oil. 2575 Timber | Vern — Irpop, Mal. Niem inam, Malay Habitat — A tree of the Western Peninsula, South India, Ceylon, and Malacca Oil — It yields an oil said to be prepared in North Arcot, and used for medicinal purposes C polyandra, Royb, I Ti Br Ind, II, 268 Vern — Peng Cachan, Sylher. Habitat — A large evergreen tree of the Khasia Hills, Sylhet, and Cachar Oil — In Spons Encyclop it is said that the oil which this plant yields is used medicinally |
| 2576 | Structure of the Wood -Light red hard, close-grained Mann remarks it is very useful for scantlings, and makes good charcoal |
| 2577 | C. ramiflora, Linn, Fl Br Ind, II, 267 Syn—C Bijuga, Spanoghe Vern—Shiner, Bino (as a Gamble) Iroph Tam, Mymeng, kabeng, myerg kabi: Burk, Gal mendbra Sino |
| DYE 2578 OIL 2570 MEDICINE 2580 | Medicine -The root is purgative. A lotion is made from the leaves boiled in cows' milk which, mixed with honey, is applied externally in |
| TIMBER 2581 | ٠. |
| 2582 | Cynosurus cristatus, Linn 15 a grass which Baron von Mueller says is particularly valuable for withstanding drought. The roots penetrate to a considerable depth. For other species see Eleusine |
| | CYPERUS, Linn, Gen Pl III, 1043 |

The roots of several spec es are tuberous such for example as C corymbosus, C esculentus, C stoloniferus, C rotundus C jemmicus, C scanosus, &c., &c Several of these are ed ble, others afford aromat c C 2583

Mats and Matting.

CYPERUS corymbosus

2584

2585

Cyperus bulbosus, Vahl., see C. jeminicus, Rottb ; CYPERACEE.

C. compressus, Linn ; Clarke in J Linn. Soc., XXI., 97

Vern - Chuncha, BENG , Salitunga, TEL. , Wek-tamyet, BURM.

References - Royb, Fl Ind, Fd C B C, 65 Dals & Gibs, Bomb Fl, 22, Cyperus in Griff Ilin Notes No 107, p 12, and 191, p. 362; Kurs, Rept, Pegu

Habitat .- A common species throughout India, ascending the hills to 2,000 feet in altitude A special form is known as var. pectiniforms.
This is said to occur in Lucknow, Chutia Nagpur, and Assam Thwaites says it is very common in the warmer parts of Ceylon. Roxburgh remarks that it "delights in a moist soil."

C. corymbosus, Rotto; C.B. Clarke in Jour, Linn Soc, XXI,

Syn.—C SEMINUDUS, Roxb, Fl Ind, Ed CBC, 63, Nees in Wight, Contrib, p 80; PAPYRUS PANGOREI, Nees in Wight, Contrib, p 88, in bart

Vern .- Gola meths, BENG.; Godá tunga kúda (Roxb.) and Goddu-tunga kodu (Elliot), Tet, Gal elu, Sing,

Ershiest - To ad then also sek- P 1 ninsulas of nd Ceylon.

as one of

) mats. It

should be observed that the name C. Pangone is open to the greatest possible ambiguity. The Madras plant mentioned under that name by Dr Bidle, OlE, is C corymbosus, Rotth, var Pangorie, Rotth, but C. Pangorie, Rosth, is C malaccenses, Lam: C Pangorei, Thw. is C.

MATS. 2587

FIBRE.

2586

| 004 | Dictionary by the Leonomic |
|--|--|
| CYPERUS Haspan. | Sedges used for |
| Fodder. 2590 | Tinnevelly, and the article is therefore heavier, coarset in texture, and not so flexible "Fodder,"Cattle are not fond of it, and it is only eaten occasionally by buffaloes " (Rozb) |
| 2591 | Cyperus elegans, Linn , CB. Clarke, Linn, Soc Jour , XXI , 125 |
| | Syn -C moestus, Kunth; C nigroviriois, The , En Ceylon Pl , 344 |
| | Vern - Wek chan, Burm (hurs, Pegu Rept) |
| | Habitat — A native of Bengal and the Malay Pininsula, Sikkim 1,500 feet, Assam, Khasia hills 1,200 feet Sylhet, Yunan, Chittagong, Mergui, Tenasserim, and the Andaman Islands |
| 2592 | C esculentus, Linn , CB Clarke, Jour Linn Soc, XXI , 178 |
| | Syn —C tuberosus, Rotth |
| | Vern -Kaserú dila, PB , Sha ts'au CHINESE |
| MEDICINE | Habitat —There are five or six distinct forms of this plant, of which two occur in India vis forma tuberosa (sp. Rottb) in Madras and forma hindustanica in Northern India |
| MEDICINE Root 2503 F00D Root 2594 FIBRE 2505 Coffee Sub- stitute | Medicine and Food —Stewart says "In N-W. Provinces the root is used as food, and is officinal as kaiers The did not, mentioned by Bellew as eaten in the Peshawar valley, may be the same Dala, however, appears to be a generic name for the CYPERACER, the roots of several of which are eaten by p gs, and their stems, &c, browsed on by cattle, as-is |
| 2596 2597 | C. exaltatus, Reiz ; CB Clarke, Linn Soc Jour , XXI , 186 |
| -39/ | Syn -C UMBELLATUS Vahl according to Rooth, Fl Ind, Ed C B C, Co., C VENUSTUS R Br., Thmostes En Ceylon Pl, 432 (nec Nees nec Kunth), C actus Nees, in Wighl, Contrib, 84 Vetn -Piedda shaka, Tel. |
| | Habitat —Commonly found in Bengal (Chutta Nagpur, Rajmahal, (Mysore, Madras, Central, "A large species, grow- |
| FIBRE. 2508 Mats | Fine Line seafe is often used for matting Mr C B Olarke de |
| 2599 | |
| | |
| | fore be held a distinct species but whatever it is collision too, |
| | |
| 2600 | C Haspan, Linn , Clarke, Linn Soc Jour , XXI , 119 Syn -C umbellatus, Vahl , 12 the Pedda 2tha of the Telegus. |
| | C. 2600 |
| | |

CYPERUS

2601

malaccensis.

Laste of some party of Done

Cyperus inundatus, Royb ; Clarke in Linn. Soc Jour , XXI , 73

Vern -Pats, HIND and BENG

| ** i.e. i I laste of come norte of Done | |
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| | |
| • | |
| | |
| , | |
| | MEDICINE. 2602 |
| C. Iria, Linn , CB Clarke, Linn Soc. Jour , XXI., 137. | *** |
| Syn -C PARVIFLORUS, Nees in Wight Contrib, 87 nec. Vahl, nec. C UMBELLATUS, Roxb, C IRIA, I inn as in Roxb, Fl Ind, Ed. C B C 67 | 2603 |
| Vern -Bura chucha, Beng , Wel hirs, Sing | |
| | |
| " '70xb Frequent in Mussourie, Nepal, cknow, Parisnath in | |
| t, Puna, Mangalore, | |
| Ceylon, &c | |
| Fibre,-The culms are used in mat-making. | FIBRE. Mats. |
| C. jeminicus, Rotto, CB Clarke, Linn Soc, Jour. XXI, 175 | 2604 |
| Came a citit w wastened to say | 2605 |
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| | |
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| | |
| Food — The roots are used as flour in times of scarcity and eaten roasted or boiled." When roasted they have the taste of potatoes, and would be valuable for food but that they are so small. "Dr James Anderson, in an excursion to the southern part of the Pennisula of Indian, discovered that the stillands arisi, growing in sandy situations by the seat- | FOOD. Roots 2606 Flour. 2607 |
| Fra and the set of the set of the set of | |
| | |
| • | |
| | |
| | |
| C. longus, Linn ; Clarke, Linn Soc Jour , XXI , 163 | 2608 |
| | 2000 |
| Clarke describes five or six forms of this plant, the type of the species occurring on Mount Abu and in Cabil. § pallecesing, Sents, in Egypt, Cordofan, &c., y typrica in the island of Cyprus, & bada in southern Europe, Maderia, and doubtfully in Madras, e clongata in Egypt, Africa, &c. | |
| C. malaccensis, Lam , Clarke, Linn Soc Jour , XXI , 147 | 2600 |
| Syn — C. NOVOPHILLUS I ahl C. PANGOREI, Roxb., FI. Ind., Fd. C. B. C. 68; C. INCL. RVATUS, Roxb., P. 66, C. TEGETIFORMIS, Benth.; C. GAN GETICUS, Roxb. | 2009 |
| Vern -Chumali pati, BENG. | |
| C, 2609 | |
| C. 2009 | |
| | |

| CYPERUS rotundus | |
|-----------------------------|--|
| : | Habitat.—Roxburgh says of his C Pangores that it is a native "of the banks of the Ganges, and serves, with C inundatus, the same useful marks that ng the cold he Sunder- lapan, and |
| 2610 | Cyperus niveus, Relz, C.B. Clarke, Linn Soc Jour, XXI., 108 Vetn — Birmutha, Santal |
| | Habitat — Throughout India and Burma (Beluchistan, Kashmir, Panjáb, Kumaon, Simla, Kulu, Nepal, Sikkim, Assam, Bengal, Chuta Nagpur, Rajmahal, &c.), Madras, &c., &c. A native of shady moist pasture land (Roxb) |
| | C. pertenuis, Rorb, see C scariosus, R Br |
| 2611 | C. Pongarei, Rollb, as in Roxburgh, see C. malaccensis; and for other plants named by different authors as Cyperus Pangorei, see Cyperus corymbosus |
| 2612 | C. rotundus, Linn , C B Clarke, Linn. Soc Jour , XXI, 167. |
| | Syn — C. HEVASTACHYOS, Reads Vern — Muthid, mothes, BFNQ, Batha byur, MUNDARI, Utru banda, U S M Sing References — Rood, Fl. Ind., Ed. C.B.C., 66, Jour At. Soc., Pt. 11 (1669), p. 81, Flavor Deads One of C.B.C., 66, Jour At. Soc., Pt. 11 (1699), p. 81, Flavor Deads One of C.B.C., 66, Jour At. Soc., Pt. 11 (1699), p. 81, Flavor Deads One of C.B.C., 66, Jour At. Soc., Pt. 11 (1690), p. 81, Flavor Deads One of C.B.C., 66, Jour At. Soc., Pt. 11 (170), p. 11 Andbrace Ph. Ind., 184, 184, 184, 184, 184, 184, 184, 184 |
| DYE 2613 01L, 2614 | Dye — Used in certain dye preparations to impart a perfume to the fabric. |
| MEDICINE, Roots 2015 | gent Sumulant and duretic properties are also attributed to them. They are further described as vermfuge. In native procince, they are held in great esteem as a cure for disorders of the stomach and irritation of the bowels. The bulbous roots are scraped and pounded with green ginger, and in this form mixed with honey they are given in cases of |

C. 2615

Mats and Matting.

CYPERUS scariosus.

dysentery in doses of about a scruple (Med. Top of Dacea by F. Taylor, "In the Concan the fresh tubers are applied to the breast in the form of lep (malagma) as a galactagogue C. rotundus is the kurepus of the Greeks and is mentioned by Dioscorides, who says it is the Juneus or Radix Tunes of th

MEDICINE.

gue, and applied to

it is also an ingred e

as an aromatic pla is mentioned in the Had (21, 351), and Odysses (4, 603), and by Theophrastus in his fourth book, it appears to have been a favourite food of horses Plany (21, 18) calls it Juneus triangularis or angulosus; it is probably the Juneus of Celsus (3, 21) mentioned as an ingredient in a directic medicine for dropsy, although he calls it Juneus quadratus." (Dymock, p 844) Arabian and Persian writers describe the drug as te that it is doses as an ā ingredient

"The roots are in Chutia Nagpur used in fever" (Rev Cambbell "The fresh roots are sumulant and diaphoretic" (Bombay Gizette (1, p 14)

Fodder.-Cattle eat this so-called grass, and hogs are remarkably fond of the roots

FODDER. 2616 2617

Cyperus scariosus, R. Br.; C B C, Linn Soc. Jour, XXI, 159 Syn - Cyperus Pertenuis Roeb , Fl Ind , Ed C B C , 66

Vein.—Negar mithė, Hind , Negar mutha Brng , Lamila Mar , Saade hoft, soad, Arab , Mushke-ammi, Pres , Nigar-mutlala, Sins , Nigar motah, Dec ; Mutlah & A., Korak khangu, Tan, Ti nga gaddala teru, klalunga musit Tet , Kira kushanna, Mal , Konneng sadde, Kan , Yomon mu, Burm

References - Rosb, Fl. Ind., Ed. C.B.C., 66 Med. Top. Ajmir. 147, Dvmcck Mat. Med. W. Ind., 2nd. Ed., 815, Irone, Mat. Ved. Patna, 75 Birdwood Bomb Pr., 94; Lotard, Dyen, Supp. IV.

Habitat -A delicate, slender grass, met with in damp places in Bengal, Oudh, and rare in the Panjab, by no means so common a plant as C rotundus

T. .. Nagar motha, Duk, id II, 162) under the

Dye - I he rhizomes are used in uje ng to h ve a scent to the fabric, and as a perfume for the hair Roxburgh describes them as "tuberous with many dark coloured villous fibres" "Its naked delicate form, small and corne

DYE. 2618

MEDICINE. 2619

| 38 | Dictionary of the Economic |
|------------------------|--|
| yPERUS egetum | Sedges used for |
| dedicine | Cyperus, but consider it to be inferior to C rotundus' "Two kinds o Nagirmoth' are met with in the Bombay market—Surat and Kaitinawa. The first is beavier and more aromate than the second Value, Surat, R. per maund of 37lb. Kathiawar Ri? The Surat Nagiammath is probably obtained from Raphutana, where the plant is common in tanks (Dymocl.) U O Dutt sive. "The root of C pertenus is common in tanks (Dymocl.) U O Dutt sive. "The root of C pertenus is somewhat tuberous with many dark coloured villous hars. It grows in low wet places, and is chiefly used in the preparation of med cated oils "Special Optiones—8 Roots, when brussed have a fragrant smell and for this reason native females keep a stock of the powdered root to wash their bodies with '(Hanor ry Surgeon P Auntley, Chicacolt Ganjam Madras Presidency)' is given in conjunction with Valerian in cases of epilepsy" (Surgeon-Major C W Calthroo, M.D., 4th Beneal Cavalry, Moris) "The root is astringent, useful in charrhea" (Surgeon-Major C W Calthroot, M.D., 4th Beneal Cavalry, Moris) "The root is astringent, useful in charrhea" (Surgeon-Major C W Calthroot, M.D., 4th Beneal Cavalry, Moris) "The root is astringent, useful in charrhea" (Surgeon-Major C W Calthroot, M.D., 4th Beneal Cavalry, Moris) "The root is astringent, useful in charrhea" (Surgeon-Major C W Calthroot, M.D., 4th Beneal Cavalry, Moris) "The root is astringent, useful in charrhea" (Surgeon-Major C W Calthroot, M.D., 4th Beneal Cavalry, Moris) "The root is astringent, useful in charrhea" (Surgeon-Major C W Calthroot, M.D., 4th Beneal Cavalry, Moris) "The root is astringent, useful in charrhea" (Surgeon-Major C W Calthroot, M.D., 4th Beneal Cavalry, Moris) "The root is astringent, useful in charrhea" (Surgeon-Major C W Calthroot, M.D., 4th Beneal Cavalry, Moris) "The root is astringent, useful in charrhea" (Surgeon-Major C W Calthroot, M.D., 4th Beneal Cavalry, Moris) "The root is surgeon in conjunction of the control of the country of the country of the country of the country of the country of the cou |
| 2620 | Cyperus stolomíerus, Reiz , C B Clarke, Linn Soc Jour , AAI , 172 Syn — C Littoralis, R Br , C Tuberosus Baker |
| RFUMERY, 2621 | Vern — Jutama 151 a name given in South Ind a to this plant |
| | called Sanbal-1 Hands and Sanbal-ul taib and in Upper India Fatamans and Balch har But as the true plant is only found at great elevations beyond the tropics, the inguitiers of various speggrass (Schenanthus) are also under the names of |
| 2622 | C tegetiformis, Roxb, CB C, Line Soc Jour, XXI, 157 Syn—C Nudus Roxb, Fi Ind, Ed CBC op 63 and 70, C benga- kensis Sprene Vern—Calameth Beng, Sura Sartal |
| FIBRE. Mats 2623 | Habitst — A native of low wet places over Bengal, flowering during the raise ' (Roth') Olarke mentions as localities—Calcutta, Chittagong, Noakhal, Burssal Mymensing, Pundua, and Assam states that the plant occurs in China and Japan Fibre—Roxburgh writes 'This species is very like C and about the same size, though I am informed it is never used for mats, To know it from C tegetum, attend to the involute, which in this is only about one-fourth the length of the umbel, but in that as long or longer' |
| 2624 | C tegetum, Royb, C B Clarke, Linn Soc Jour, XXI, 160 Syn — C. CONYMORUS Keening in part C Schihfermanns Sig d C Dehisches Studie C Pancoles Thomain Control Studie PARCOLE Studies C Pancoles Thomain Control Studie PARCOLE, Vice Studies Control Studies Control Studies PARCOLE, Vice (the greater part) and C CONYMORUS, Nees |

C. 2624

of mind must show it exists, not generally but in reference to the particular matter in question. Two illustrations (e) and (f) of Section 43 of the Indian Evidence Net were not then in existence. Before 1891, Sec. 54 of the Indian Evidence Act runs as follows —

In Criminal Proceedings the fact that the accused person has been previously conrected of any offence is relevant, but the fact that he has a balcharleter is irrelevant unless evidence has been given that he has a good character, in which case it becomes relevant

Expluntion—In Ss 52, 53, 54 and 55, the word character includes both reputtion and disposition, but endence may be given only of general reputtion and general disposition, and not of particular acts by which reputtion or disposition were shown

In 1887 the Full Bench Cive of Queen Impress r Kartic Chandra Bot 14 Cal 721 was decided. The result of the Full Bench decision led to the passing of Act III of 1891. By this Act the following additions were mide to bee 310 Cr. P. C. —"Notwithstanding anything in this section, evidence of the previous conviction may be given at the trial for the subsequent offence if the fact of the previous conviction is relevant under the provisions of the Indian Evidence Act. 1872."

By Act III of 1891, Explanation 2 of Sec. 14 Indian Fudence Act,

By 1ct III of 1891, Illustrations (e) and (f) of Sec 45 Evidence Act are added Read these illustrations

By Act III of 1691 the Sec 51 of the Evidence Act was modified

In the case reported in 1 C W N 146, the previous convictions are held to be inadmissible. The Public Prosecutor in reply put the 2n land 3rd points together and sud that previous convictions are evidence in this case as evidence of habits. He referred to 27 Cal 129 16 C W N 69

3rd. point—If the Publi. Prosecutor wants to put in the previous conviction not rs evidence of liabits, he cannot be guided by the provisions of the Indian Pridence Act. Because under the Indian Evidence Act, this only relevant as evidence of character. Therefore the procedure must be followed as provided in Sec. 310 (a) 1, ii, Cr. P. C. The case reported in 31. C. L. J. 32 su ports the defence.

The Judge over ruled the contention of the defence. The disction was mule to the stitements of the occurrences which were not reported to the police station Section S, Rilustration (E) Sec. 27 Ct. IJ and Sec. 177 of the Indian Fudence Act were relied upon The Judge our ruled the contention

The approver wrote a letter from Burdwan. The prosecutors wanted to put that in-the defence objected to it on the ground that it is not admissible in crudance. In Sec 17, Indian Evidence Act, admission has been defined. The letter is a document—it is not an admission within the meaning of Sec 18, Indian Friedence Act, It can slow be

proted agunst the approver Sv 21 Cl (1), Indian Endence Act does not apply because it cannot be relevant under Sec 32, Indian Endence Act. Cl (2) does not apply because it does not state any tang about any state of mind or body Cl 3 would have been applicable if Sec 10 of the Endence Act was applicable But as Sec 10 was not applicable, Cl (3) can not help in any way A stitement is not admissible in fivour of the person making the same unless it comes under Sec 32 or Sec. 137 of the Indian Endence Act 17 must be reed with Sec 3 of the Fudence Act 18 is neither a relevant fact nor a fact in issue. The Judge core ruled the contention of the defence.

It took a long time to finish the Examination in Chief and the cross examination of the approver

During the cross examination of the approver—his statement before the police was supplied to the defence in accordance with Sec. 16°, Cr. P. C. The approver was allo cross examined with reference to such statement.

After the approver's evidence the verifying Mugistrate wis examined by the Prosecution The leader of the defence mentioned that the verification proceedings are illegal No section of the criminal Procedure Code authorises such a procedure Taking for granted that such proceedings are not wholly lilegal so fars also police work is concerned, the statements made to the verifying Magistrate in course of such proceedings are inadmissible. The following are the cuses in support of the above proposition of law.

(1) 7C W N 220 (u) 15 C W N 593

(m) 22 C W N 593

If the verification proceedings and the statements made before the verifying Magistrates are admissible then the brief of the public prosecutor and the instructions given to him will be admissible

The Judge declined to mark the report of the verification Magistrate After the examination and the cross examination of the veryfying Magistrate, all other witnesses were examined and cross examined

Thereafter the examination of the accused duly recorded by or before the committing Migistrate was tendered by the Public Prosecutor and read as evidence The evidence of some of the witnesses duly recorded in the presence of the accused by the committing Migistrate was treated as evidence in the case. The accused were all one by one asked questions whether they are willing to mike strements explaining the circumstances appearance in the procedure of which is given in the heads of charge. The accused persons were then asked whether they ment to adduce evidence. All of them said that they did not want to adduce any evidence. The Public Prosecutor then summed up his case. He began his arguments on the Miss Miss 1920 and closed the same on the 27th May 1920. The leader of

the defence opened his case, stating the facts or law on which he intends to rely and making such comments as he thought necessary or the crudince for the prosecution. He began to sum up his case on the 15th May 1°25 and closed his summing up on the 4th June 1925. As no evidence we sadduced on behalf of the defence, the protection had rought of reply. It was, it first, thought that the Juny should was the place in which the off neck-thuged were committed but the Judge thought is unnecessary for the purpose of the pre-entense. The Judge charged the Jury on 12th 15th, 7th, 20th, 21th, and 25th June 1925 during the usual court hours but the charge, was not finished. He began to charge the Jury on the 20th June from 11 a m and continued it till 11 by m when the charge was finished.

It is the dety of the Judge (a) to decide all questions of law art ing in the course of the trial and especially all questions as to releasney of fats which it is proposed to prove, and the alm subility of evilence or the property of questions asked by or on behalf of the parties, and in his discretion to present the production of inadmissible evidence, whether it is or is rot objected to by the parties, 'b) to decrie mean the meaning and construction of all documents given in evidence at the trial . (c) to decide upon all matters of fact which it may be necessary to proce in order to enable evidence of particular matters to be given . (d to de de whether any question which arises is for lumself or for the Jury, and upon this joint his decision binds the Jurors The Judge in course of his summing up expressed to the Jury his of mion mion the questions He mentioned about the reliability of witnesses and about the guilt of the accused He also asked the Jury to form their own oper to (I L I 10 Cal 970) The Judge delivered his charge with sufficient fulness to the lary and in such a way as to enable one to say that all points of law and fact were clearly and correctly explained to the Jury having regard to the evi lence adduced in the ease See at C W. 5 357, 14 Cal 608

I propose to append to this book the materials which contains the spaques of the entire evidence that could be found in the records of the Alpore. Seesons Court as well as of the examination of the accused persons. Although the Julge expressed his opinion or queetions of fart, rometimes very strongly, one examination in the last to be influereing the Jury so that their function might be reduced only to register the opinion of the Julge and bring in a writer according to his data. See 10 C. W.N. Sell. Strictly speaking there was not the sightest misdirection. The charge was entirely in favour of the according to The heads of charge caused patients.

After the Julye finished his charge the Jury retired to consider their respect to They retired at 11-17 pm on the Cth of June 1923 and delicted their verdict at 4 a.m on the 27th of June The Jury were looked up

during their deliberations. It is duty of the Jury (a) to decide which view of the facts is true and then to return the ver hit which ander such view ought according to the direction of the Judge, to be returned, (b) to determine the maning of all technical terms (other than terms of law) and words used in an unusual seasy which it may be necessary to dit rimine, whether such words occur in documents or not, (c) to decide all questions which according to law are to be deemed questions of fict, (d) to de ide whether general indefinite expressions for or do not apply to particular cases, unless such expressions rifer to legal pro-clure or unless their mening is accretined by law in either of which cases it is the duty of the 30 leve to dead their mening

Difference between Molussil Sessions trial and High Court Sessions trial -

Practically speaking there is no differ nee. Only matters in which there is a diff reree are as follows—

High Court

(1) all trids before a High Court are by Jury

- (2) In trials before High Court when it appears to it at any time before the commencement of the trial of the person churged that any charge or any portion thereof is clurly unsustainable, the Judge may stay proceedings upon the others or protein of charge.
- (3) In trials before the High Court the Jury consists of nine persons
- (4) In capital cases and in cases where Julie so line is the trials shall be by a special Jury

Mofresol Court

- (1) All trials before Mofussil Courts are either by Jury or with the ail of assessors
- (2) No such provisions in mofusssil

- (3) In Mofos-d Courts the Jury consists of such uneven number not being less than fiv or more than num as the Local Government may direct Provided that ne cyntal cues the Jury shall consist of not less than seven persons and if practicable of num persons
- (4) In any district for which the Io al Government has declared that the tiral of certain off nees may be by special Jury the Jurors shall in any case in which the Judge directs be chosen from the S Jury list.

Jury

High Court

eight on behalf of the accused

without any ground whatsocrer

- (5) Objections to a particular Juror shall be allowed to number of eight on behalf of the Crown and
- (6) When in a case tried before High Court the Jury are unanimous in their opinon, or when as many as six are of one opinion and the Judge agrees the Judge shall give judgment in accordance with such opinion When in any case the Jury are satisfied that they will not be unanimous but six of them are of one opinion, the foremam shall so inform the Judge If the Judge disagrees with the majority, he shall at once discharge the Jury If there are not so many as six who agree in opinion the Judge shall, after the lapse of such time as he
- thinks reasonable, discharge the (7) The clerk of the Crown shall prepare the list of common as well as special Jurors.
- (8) The Advocate General may stay proceedings
- (9) The Chaf Justice shall appoint time of holding Sessions
 - (10) The High Court shall hold its sittings at the place at which it now holds them, or at such other place (if any) as the (lovernor tieneral in Council in the eve of the High Court at Fort William or the Local Government in the ease of the other High Courts may direct

Mofussil

- (5) In Mofussil no objection to a Juror 19 allowed without any of the grounds mentioned in Sec 278 Cr P C
- (6) If in any case before the Mofussil Court the Judge disagrees with the vertict of the Jurors or of a majority of the Jurois on all or any of the charges on which any accused person has been tried, it shall refer the case to the Huh Court

- (7) Sessions Judge and the Collector of the District or such other officer as the Local Coremment appoints in this behalf, shall prepare the list of Jurors
- 2 TOURSON (b) No such Mofneyd
- provision In (9) No such Mofussil
- (10) No such province in
- Mofussil

CH XVI]

Mofussil

High Court.

(11) The Chief Justice shill (11) to such provision in motify beforehand in the Local Mofussil
Official Gazette of all sittings of the Criminal Sesson intended to be

held

The result of the Sealdah Gang case was some of the accused were connected and others were acquated. The convected persons preferred an

appeal to the Hon ble High Court and the appeal was dismissed (b) Pakur Case—Case against Dr Sivapado Bhattacharyya —

Mr T H Flis, District and Sessions Judge, Alipore heard the case with the aid of Juris Many eminent a Procates appeared on behalf of the several accused in the case Dr Sivapada was represented by Mr P N Baneriee, Advorate

Facts-Ram Saryabati of Pakur had a separate estate with an income of Rs 20 000 annually She had brought up Amarendra who had lost his mother in his infancy. On the death of his father, Amar prosecuted his studies at Patna while B nov managed the estate. Benov was trregular in remitting money to Amar, so Rani Suryabati supplemented in Amar had passed the intermediate examination in arts and decided to read for the B A degree After the death of Benov's father. Ram Survabiti lived away from Pakur as Benoy took a woman there and accommodated her During Pujus in 1932 Amar was at Deogath where B noy also came They together went out for a walk Benoy left the same night. Lour days later Amar s eyes were affected his face became crooked his lips twisted and he could hardly speak A do tor opined that the case was one of tetanus. Rant buryabati wired to Benoy at Calcutta to bring the fumily physician He brought Dr Taronath instead Rani Survabati grumbled why no eminent physician was brought. Under the treatment of a local doctor, Amar gralually recoverd Benov without being asked brought Dr. Dhar from Calcutta who gave an injection which made Amar's condition worse. His condition became critical at night 1)r 1)har left the next day Amar gradually recovered under the treatment of a local doctor, but Benov again unasked brought Dr Dhar and Dr Swapada from Culcutta for Amar's treatment Amar was brought to Calcutta and recovered after a long time the expenses of treatment amounting to Rs 1,000 A sinus appeared where Dr Dhar had given an inject on. After this affair Amar contemplated a partition of the estate bome time after Amar was brought to Calcutta by a f wire sent in the Ranis name. While going back to Pikur with Suryabati at Howrah statio; Amar was given a pin prick by an person He went away to Pakur but came back to Calcutta to

326

blood examined When Rant was brought to Calcutta by a wire she found Amar lud up with faver and swollen arms. He was under the treatment of Dr L M Banerjee and Dr B. C Roy but Amar died, Dr Banerice asked her to inform the robic, but she did not as it might upset Amar

Dr Firapada amongst others was charged with conspirery to murder. The whole case could not be discussed here as the case of some of the accus d is subjudi e pending in appeal before the Calcutta High Court

The cross examination of some witnesses has been given in the chapter on cross examination. In addressing the Jury Mr P & Banery v, Advante of Dr Sn it ala referred to the discussion that took place between Dr Sivapada Bhattacharice and Dr. Harihar Banerice at the Medical Supply Concern about plique breille and said that in the course of the conversa tion both of them sud that they did not know about the effect of the pligue bacille Subsequently Dr Sivapula told Dr Haribar Banerjee that he came to know of it from the expert opinion gathered by the Police The prosecution suggested that Dr Snapada became afraid when he heard about the arrest of Dr Taranath and on the very day he heard of it he ran to the Medical Supply Concern and in course of making investigation he started this conversation with Dr Harihar Dr Swapada was a co-col spirator and he went to the Medical Supply Concern apprehending danger

To meet that argument the defence Advocate and that he went to the Medical Supply Concern on the 18th of Pebruary and on the 1th Pibruary in the afternoon police collected expert opinion on the plague bacille. It might be probable that Dr Shapida came to know of it and told this fact to Dr Harihar in the course of the conservation that took place between him and Dr. Haribar on that day

Mr. Banerjee next referred to the endence of Rant Jourmoyce who sail that on the 11th of I chruary Dr Sarapada hal been to her place for treating a patient. After examining the patient when Dr. Suapada was leaving the place Rani Jot rmoyee asked him as to the cause of Ama endra's death and bunpula tol ! ber that it was a pure case of mur ler although Dr Sirapada saul he did not tell anything to Rani Johirmojee Mr Beveryee and that it might be probable that Dr Sivar advaster coming to know that B. Pasts was found in the blood of tmar ndra from the blood culture report he might have recalled in his mind the symptoms with he had sourced in Amarendra's system during the time he was lyin, ill

Continuing Mr Isanery e sail that it was definite that up to that time B Pestis was not detected in the Hool of Ameren in Dr Sirapala was not aware that there was a single case of plagus in Calcutta Dr Syspads and the defence Adresate, was arrested on the Jith March and this story of R. Pest's came out through Rani Jourmoyce Collecting together all these encumstances Mr Panerice remarked that her entence was not reliable

CH 7/1]

Dr Evrapudo in his statement and that he went to the Medical Supply Concern on the ISth of Lebruary and the Public Proscutor said that it was very suspicious on the jart of Dr Saupada to go to the Medical Supply Concern and that clearly provid that he want there on receipt of the information of the arrest of Dr Taranath because he had apprehended dancer.

Mr. Baneriee in his defence said that on the morning of that day he came to know through phone that Dr. Turan the and Dr. Dhar had been arrested in connection with Pakur Cise He also came to know that they were arrested in connection with the death of Amarendra Pande who was injected with plague bacilly. When he heard that story he must have recalled in his min I about giving a letter of introduct on to Dr Jaranath who said that he required it to go to Pombay Dr Sivanada must have failed to recall in his mind whether he had given him any letter of introduction at all which was not at all unnatural for a busy do tor like him who had to attend multifurious business. It was very hatural for an honest an I innocent man to think like that although the 1 Insecution made much about it. With a view to have light on the point Dr. Siyanada went to the Medical Supply Concern to enquire about Dr Taranath He was an honest man and that was the reason why he voluntarily told that fact to Dr. Harihar Banerice at the first instance he met him at the Medical Supply Concern Dr Sivapada, sud Mr Bantrice could easily I cen at in secret if he was a conspirator and would not have gone there and voluntarily disclosed these facts to Dr. Haribar Banerice

One of the questions that was put to Dr. Harthart Buneriee was whether Dr. Taranath had gone to Central Province and Bombiy. Was it the conduct of a conspirator? Could that question come from a min who is alleged to be a conspirator? The inswer would be no, never. On the other hand that showed that Dr. Suxparla was ont of touch with Dr. Taranath for a long time. It was natural for an honest an linnocent man to go to the Mich. it Supply. Concern to enquire about Dr. Taranath on the day he heard about his arrest. The above circumstances, said. Mr. Baneriee con lusardy provide that his Linn, we not guilty of conserve.

Pro ceding the defence Advocate sail that the Public Prosecutor suggested in his argument that Dr Taranath going on the 13th November to the house of Dr Evapal's it midnight proved that Dr Supal's was in conspiracy with Dr Taranath Public Prosecutor in support of his argument's oil of he wis not a conspirator why Dr Supal's discovered this man coing to his house of last stim. In T

In most that suggest on made by the prosecution Mr. Banerice said that Dr. Hawhar Banerica has condense sail that Dr. Excapady, dold him that on the day as men timed by the prosecution Dr. Taramath came to his house in connection with his wife, sillness but he did not come downto meet him as he was tred and independ If Dr. Excapady him; that

328

he was a conspirator he would not have told this fact to Dr Harihar Banerjee This discloser before Dr Harihar Banerjee clearly proved that his client was not a conspirator

If Dr Sivapada was in conspiracy to kill Amar Pandey he would nate rally know that Amar was injected with plague bacilli at the Howrah Stat on Certainly he would have known from what Amarendra was suffering. If he was a conspirator certainly he would not have disclosed these facts to Dr Harshar Banerace and others to risk danger. On the other hand he would have kept everything in secret for his safety

Proceeding, Mr Banerice said that another circumstance in favour of Dr Sivapada was that when he went to see Amer at his death bed he did not take any precaution for his own safety. It was alleged that he was in the conspiracy If so, he must have known that Amar was suffering from plague. He not only took any precaution but, according to evilence even sat on Amar's bed He must have known that it was a very risky thing. All this showed that he did not know that it was plague. No doctors dul

The evidence further was that Dr Sivapada was an M D, a professor of the Tropical School an eminent ductor having an extensive practice and a house in Cilcutta Consilering his status education culture and position in society, was it likely that he would risk his fair name and reputation by entering into a conspiracy to Aill Amar against whom he had no grudge? What was the price paid? There was no end nee that any cheque or money had been paul to him nor was there any eri dence that about that time Dr Sivarad's had deposited a big amount in the bank I ven if it was assumed that every man had its price a good part of the lakur lia) estate was necessary to buy up a man of the position of Dr Esvapada. It was an astounding proposition

Mr Banerjee next submitted that if there was a conspiracy, there must have been association between him and others during the period of con spiracy In May 1932, it was said that Dr Taranath made frantic efforts to get plague culture from the Haffkine Institute of Bombay Later, Dr Ukil brought a tube of | lique culture for him About a year later, this Dr Ukil also gave him a certificate although he denied it in lower court. If he had admitted it, Dr Sivapula would have been saved from the worry and anxiety of this trial because the erroneous belief that it was he who gave the letter which Benoy carried to Boml av was responsible for his arrest.

Dr Taranath was himself a bacteriologist and he had the help of such an eminent bacteriologist as Dr Ukil Where then was the necessity ! ! Dr Taranath to consult Dr Esrapula about the virtues of plague barille? Where was the evilence to show that Iknoy approached him for learning the virtues of different culture? There was no evilence to support the allegation that his was the skilled brain which played the part in the conspira y by selecting the plague culture as other kinds of bacteria would not CB XVI l

do. That was the early part of the conspiracy The second stage was the Droghar visit. What did he do there? Would he do and say things which would save the victim of his alleged co-conspirators? Was that the way in which he helved his co-conspirators?

The third stage was the certificate which he gave to Dr Taranath The proceeding might argue with some reason if that letter had been carried by Ringy to Bombay. But there was no evidence that Dr Eurapada's letter had ever been used which only showed that it was a worthliess letter not fit to be used. If they were in comparacy would Dr. Eurapada give such a colourless letter or would they accept such a letter? It only noved that there we was no consurance.

What took place on December 2, when Dr Sivapada went to see Amar and the subsequent events were isolated acts hiving no connection with the conspiracy. It was by the merest chance that Dr Sivanda was summoned to Amar's death bed. It was again pure accident that Amar's relatives went to him for a death certificate. They might as well have gone to Dr G. S. Chattergee for it. There was also no evidence that the conspirators managareted in such a way as to have no option, for Amar's relatives but to call him.

What did Dr Sivapada do when he went there, asked Mr Baneriee The first thing he suggreted was that blood should be examined. He was told that blood had already been taken by Dr Gupta for examination. If he was constructed, he would not have made such a suggestion Because he would be the first person to avoid it, lest it would recall the presence of plague breilli which, as a conspirator, he must have known, would be found in Amar's blood. There we also no evidence that, knowing that the blood had been taken for examination, he tried to influence Dr Gupta with that Dr Staythad never saw him in December. Nor was there any evidence that he tried to tamper with the unlocked insubator in the school in which Anar's blood had been preserved. Precing together all these circumstances and having regard to the fact that he never tried to see Dr Gupta, the inference was irressiable that Dr. Struptad was never in the consequence.

It was also significant that on March 6 list LF Esrapada was not arrested ulthough the jolice had all the firsts before them. They knew that DF issupada had given the death certificate and had failed to inform the police. These firsts were not sufficient. On march 6, he admitted that he gave a letter to DF Taranath. He was not conscious what trouble he was bringing upon limited by making this admission. The police atomic cume to the conclusion that this was the letter which had been carried by Benop. And therefore DF ferrapada had helped them in the conspiriety. He was arristed. In the lower court, Dr. Ulti-faild that he did not give any letter to DF Taranath. Dr. Nadu

could not remember who was the author of the letter brought to him He remembered that it was an eminent Calcutta doctor who was attached to an institute That exactly fitted in with the description of Dr. Sivapuli and he was arrested in the Sassons Court, Dr. Natla remembered that it was his professional fraund Dr. Ulal who gase taketter. Dr. Taranath also admitted that Dr. Ulal gase inm that letter This was a bomb shell to the pro-ecution case. And must they came with the explaination that Dr. Sivapuli must have been brilled to the death certain ate. There was not a tittle of evidence to support this belief explaination of the Crown.

In order to come to the conclus on that Dr. Evrapada had caused the disappa trance of the evidence of murder and had omitted to inform the point t

Rubi now said that he was occubelined with grief and so he did not inform the police. However much he said now that was no rason who he could not inform the authorities. In every minder case, the relatives felt graved. But they did inform the policial the same. If he behaved in the story whis did he send for a death certificate? Illis conduct showed that he himself did not behave the story.

Mr Bunrye, in the course of his address said that towards the conclusion of the prosecution address that what I I suspend Lead and saw he had reason to behave that it was as ease of municional there was sufficient condenses showing that the death of Amarcidia was caused by march r

With regard to the first item, sail Mr Panerjee that he woull drive the attention of the Jurora to the three distinct reports he had the relation of the first lander, on if the first to members of ite family, and that nothing had been friend in the light culture. Then he was requested by Procach Mis and proceed a crutheste and those reports came to him before the area of the extraction of the crutheste and those reports came to him before the crutheste.

With regard to the report of I alundra I will that Palin Ira himself and in Ira evilence it santosh Kumar Gupta who I all taken the I paid of about the result. He role and in his e

ters lale been to l tre sole to'd by Dr. Santosh Kumar Gupta that no growth was showing in the blood culture. Then agun Cuptain Chatterie who proved in his evidence that Rabindra told him that nothing was found in the blood.

In that cornect on he said Rabindra Tandey was re-examined by the prosecution and Rabindra in re-examination stitled that no poison was found in blood

Proceeding the defined video at stated that from evidence on record there was clear proof that in the case of ordinary discusses such as malaria influenza, typhoal etc. if the blood was takin for culture growth was visible between 48 and 72 hours. Dr. San oas Guptia also said that in case of malaris they could give the report then and there. In case of typhoid it takes about three days but influenza takes a long time because it was a slow going germs.

Dr Stapada grew suspicious no doubt when the 110 prick incident at Howards Estaton was reported to him and as a doctor he was looking forward for the resolt of the blood culture. He was very much anxious for the blood culture report because he thought the blood culture report would help him in treating the pittent. So Lr Stupida was expecting that the blood of Amarendri would lash how some growth between 48 and. 72 hours before he had heard the result of the blood culture.

Exactly after the lapse of 72 hours Pabindra Pandey gave Dr. Sunpada the report saying nothing was found in the blood

Dr Sivapada was satisfied because he thought that the blood has been cultured by an expert hand and from such a big institution and therefore naturally conclude I that it was the final report.

He naturally came to the conclusion that Rabindra Pandey who was taking so much interest in Amarendra's welfare must have given him a correct report and therefore he had no heatman in giving the death extribetive.

He saw the symptoms of a largue but still be could not conceive the idea of plugne on the free of the blood culture report as he had heard from Palandra Pandes.

Under these circumstances it could not be said that Dr. Sivajada had reason to believe that the death was caused by marder

Mr. Bunche said that the lest circumstance which went greatly in favour of Dr. Everpady was that on December 4. Lenov went to Dr. Assum and 1. kel him. I out the none on I divers of the do tor who had taken the blood of Amer. and if marking, was found in the blood. Does were the things with the very let at 1 k lown in Dr. "vanjade. If they were in the conspiracy. Below in glit hove, he own these things from Dr. Every at Little were in the the Review for to enquire alout these things showed it has a unaware of these details. That conclusively proved that Evapord was not in the conspirace.

The supreme question for the Jury was whether Dr. Strapids was in the conspiracy. The evidence showed that there was not the remotest lichihood of his being in the conspiracy. If he was not a conspirator, what was his motive in suppressing the information from the police? For whose benefit would he do it? Why should he perceively dishelies the story of the pin prik? If he disbeliesed it, it must be for other reasons. It was not in this court that he for the first time said hat he suspected no foul play. On February 13, when he was a free man and there was no talk of his arrest he told the police about it. It could not therefore be sail that it was a belated defence

Concluding Mr Banerjee said 'Can you lay your hands on your breast and eny with satisfied judgment and clear consectance that Tustice demands of you to say that the charges against Dr Stuvpula have been proved? Remember that before you make up your munds against my client on any of the clarge. Remember that before you brand this healer of men as a killer Remember that before you make a clean sweep of a brilliant error like his Remember that also before you deprive the own mundity of his humane services, before you deprive parents of their son, wife of he husband and children of their father and finally before you knock hum down from the sacred and exalted chair of the tacher You must be conclusively satisfied beyond all shade of reasonable doubt that you are not setting up a dangerous precedent by convicting on any nothings

"Remember gentlemen," and Mr. Ranerjee, "that your supreme duty is to rise above the privailing atmosphere of a rijudice, suspicion and sensition because once your verdish has gone forth there is no going back upon or restifying at horest much you may regret or repent later. Remember that suspicion never supplies positive evidence nor do presumptions supply by gal proof.

'If you remember this while deliberating in your retiring chamber, You can come to but one verific regarding my client and that is one of not guilty. And because I believe that, I feel that the longer I speak to you the better are the chances of my covineing you of his innovence.

I am deeply conceous of a personal interest in your verdict for if it were an unfarourable verdict. I could attribute it to no other cause than my own inability to conduct the defence an I feel persuaded that if it were so the recollection of this case will haunt me as a dismal and blighting spectre to the on 1 of my life.

Dr brapada Bhithcharya is finnocent. May his judges, declare it in no uncertain terms so that he may leave the court, without stain on his character. This is my carnest appeal to you. May it find a response in your hearts."

The jury returned an unanimus verdict of not guilty so far as 1hr Strapada was concepted. Dr Strapada was acquitted.

CASE AGAINST MR N R SARKAR

Full Text Of Hon ble S K Sinha's Judgment

Following is the text of the judgment of the Honble S K binha in the case against Mr Nalmi Ranjan Sartar -

The principal characters in this case of alleged adultery are Pramatha Nath Sircar, aged 36 a Brahmo by persuasion and a 1 rofessor of Leonomics on a salary of Rs 110; per month in the first grade College at Peni in the district of Noakhah , his wife Bina now a cd 24, a graduate of the Calcutta University, daughter of Bibu Sagendra Kishore Biswas a clerk in the office of the Director of Land Records, Almore residing at 1 Dr. Rojendra Road, Bhowampur, the accessed Salini Raman Sirkir aged 56, Mayor of Calcutta and the head of the Hindustan Insurance Co a sudower, suthout children, living alone on the top floor of the Hindustan Buildings, he is the first cousin of Bina's father Nagendra Biswas, their mothers being sisters . Bina calls him Bara Kaka, amount Bengalis the relationship is reckoned as that of uncle and niece but really nothing more than that of second couring, there would have been no but to their marriage under the Civil Marriage Act 1873. The complainant Promaths Nath Sarkar and Bina Piswas were married under the Cycil Marriage Act on October 4 1929 in the Prahmo Samai prayer Hall at Bhowanipore

Story of the Case

The present case was instituted in the husband's complaint on I ebruary 23, 1935 some eight months after he discovered them in the act of adultery on June 17, 1931 in the accused a residence in the Hindustan Buildings This unusual delay in coming to Court will need further consideration in due course. The principal allegations made in the petition of complaint must be set out here for comparison with the facts appearing in evidence At the time of the marriage Bina, then aged 19 was a student in the second year class of the Diocessan College Calcutta The complainant says he agreed that even after marriage she should continue to live with her parents in Calcutta and proceed with her studies, that she passed the Intermediate Arts I xaminat on in 1930, while he would have to go to Feni Immediately after the wedding he took her to his family house at Krishna gar where his mother and sisters live. She staved there for a week, occupying, the same bed room but there was no consummation of the marriage, on account of her objection. She returned to Calcutta and after staying on for a month at Krishnawar till the end of the Purch vacation he returned to his duties at the Feni College. On several occasions he came to-Cilcuits and nut up at his wife's parents' house but she was always cold and indifferent and their was no inter course. The accused was a and regular vis tor to the house. Bina was always very attentive and often used to go out in his motor ear , on enquiry he learned that

used to visit his flat. About six months after the marriage, in April or May 1930, a professor in the Teni College gave him a hook called The Recollections of Romesh Dad' an obscene book, the nublishers of which were prosecuted and sentenced to imprisonment in 1931), there was some reference in it to the accused a character and this first rous d his suspicions regarding his wife's relationship with the accused. As she continued to refuse him his marital rights, he questioned her as to whether her affections were elsewhere she refused to real). On another occasion, when pressed igun she agreed to perform her wifely duties provided he used cont aceptions this made him still more suspicions and he asked how she came to I we any knowledge of an h things, her reply was- 'from friends," without disclosing any names. Towards the end of 1930 her parents wrote to him at Fent that Bing was in it different health and required a change, she might be sent to Listoregum (Mymensingh) to stay with her uncle Debendra Kishore Biswas and his family, to which succession he agreed Instead of going there, however, she went off alone with the accused to Delhi in January 1934, without her husband's knowledge or consent and spent three mouths there with the accused living alone with him in a house repted by him and at his expense, they returned to Calcutta to ecther on 14 4 1931 travelling in the same compartment, marked reserved for Mr and Mrs N R Surear

Husband s Suspicion

The complunant came to Culcutta from Fent when his college closed for the summer vication in April , after staying at No 1, Dr Rajendra Road for a few days, he took his wife to Krishnagar She still refused to be a wife to him , he says he noticed physical changes in her, though he had never had intercourse with her and he sensed something wrong One exeming he forced her to have intercouse and found she was not a sirgin On being questioned, she refused to reply and became angry, on his persisting and demanding an explanation, she admitted that at Delhi she had slept with the accused He however, forgive her When he returned to Tuni at the end of the summer vacation of 1931 she refused to so with him and mainst his wishes returned to stay with her parents in Calcutta and begin her studies for the B A having passed her I A in June or July Shortly after that, he stopped sending her money to pay her College fees which he alleges, were paid by the accused In the summer of 1932 she took her degree, as a result of his protests to her parents, she agreed to join him at I m On her arrival, he says he noticed ection physical chang s in her which led him to suspect that she was prignant and he uranged that they should occupy different bed rooms. After two or three months his suspicions were confirmed on his taxing her she fell at his feet and with terrs in her eyes admitted that her Bara

Kaka was responsible for her condition—that he had also debauched her two coung resisters and his o on counge hothers wife except that with them he had used contracted ross whereas with her he his Listen no such precautions—she begard for for the constant in besought him not to publish her shame on promess of heng a fauthful write. In future he forgive her and consented to treat the child as his own. The child was born at the Chittarapia have said an Hospital in clients on 118 1031 the accused reserved a room for her and not the confinement excesses.

Hindusthan Building Incident

While the complainant was on a hold lay in Calcutta during the summer vacut on of 1111 in acquirint ince Bono h Behari Biswas went to him one evening and osked for an introduction to the accused with a view to securing the agency of the Hindusthan Insurance Co for the district of Na has home being in that district. The complaints t agreed and on 17 6 34 he took him to the accus de flat in the Hindusth in Buildings . on entering the accused a bedroom he found, to his horror, his wife and the accused by g maked in bed in each other sarm the accused went into the bathroom and closed the core his wife not furious and ordered him to go out of the room he thought it useless to protest in view of her att tude and he and Benole Biswas left the place. He consulted his brother in law Bibbitti Bhusan Stream who however adjused him to do nothing hastily and returned to Feni at the end of the summer vacation, on June 30th He next came to Calcutta during the Purchs and as the result of another family conference he inserted a notice in the Statesman in October to the effect that his wife having left his protection, he was no longer responsible for her debts. He also wrote a registered letter to his wife which was refused and returned to him. On February 22nd 193) he came to Calcutta to attend an Examiner's meeting His brother-inlaw Bibbati showed him an article entitled "After 17 years' in the 'Khesh' of February 7, in which his wife's name was coupled with accused s in no flattering terms and advised him to take proper act on. as the matter had become a public scandal. The complainant says that he went to a certain firm of Solicitors with a view to instituting divorce proceedings their advice, however was to bring a criminal case against the accused and the complument allowed himself to be guided by them At the time of presenting the complaint, he produced some 20 letters written by his wife to him, one of them, from Delhi, was to the effect that she was sleeping on the verandah with Bara Kuka. The compluments lawar also undertook to prove from the Railway records that accused and Bina Streat travelled together from Delhi to Calcutta on April 14 or 1 , 1931 in a compartment marked reserved for Mr and Mrs N R. Ser also from the records of the Chattaranian Hospital that the accused gared a room there and paid for Bina birear's confi

333

Application was also made for search of accused a flat and Bina a room in her parent's house for letter and her papers. No warrant was taken out for search of the accused a house. In Bina's room, on search by the police was found her private diary. The hospital sent certain registers and bed head tickets which did not bear out complainants allegations and have not been tendered in evidence. The Railway authorities wrote that the records of reservation in 1931 had been destroyed under the rules On these allegations pro ess was issued against the accused to answer a charge of a lultery The oral evidence in the case is that of the complainant himself his wife who was summoned as a court witness. Badiuzaman a motor driver of the late Raja Bajos Singh Dudhorn who deposes to intimacy between accused and Bina Sircar at Delhi Mr Shamsuddin Ahmad an Advocate of the Cylcutta High Court and elected Councillor of the Calcutta Corporation, who proves Bina's residence in accused a house at Delhi Benode Behari Biswas, brother in law of the complainant who is said to have accompanied him to the accused a residence on June 1" 1934 and seen the accused and Bina Sircar in a compromising posi tion Bibhuti Bhusan Sarcar another brother in law of the complainant who acted as his friend guile and philosopher and at whose instance complainant decided to take legal action against his wife and the accused, and Bimalendu son of Bibhuti who is said to have kept a watch on Bins Sarkar's movements from October 1933. There is in addition documen tary evidence relevant to the issue in the shape of Bina's letters to her husband which he has produced she having waited her statutory privi lege under the provisions of Sec 122 Fuldence Act There is also available Bina s personal diary which was found in her room in her parents' house was searched by the police at the instance of the complainant. Finally there are complanants letters to his wife. A word of explanation is necessary to show how they came to be produced in this case. Bina 8378 that she made them over to her father in October 1934, after her husband assued that n tice in the 'Statesman with a view to taking legal advice her father made them over to a lawyer. They have been produced in this court from the custody of the accused. How he came to be in possession of them is not explained Bina is unable to offer any explana tion It is I think reasonably obvious that either Bina or her father ma le them over to the accused for the purposes of his defence. The matter might not have been worth mentio ing if it were not far from the fact that these letters were the cause of quarrel in June 1934-according to the complainant on June 14 but according to his wife on June 23-which led to the final rupture between them Complainant says that he came to Calcutta on or about June 11 and put up at 1, Dr Rajendra Pond , there was a quarrel two or three days later and his wife ordered him to leave the Louse. The occasion of the quarrel is tolerably clear, he says he was reading his wifes personal diary and her letters when she

come in, flew into a rage and told him to clear out. Her version is slightly different, in her absence her husband abstruted from her box his letters to her and put them in his own box she took them back hence the quarrel. She almits having told him he could clear out. It is therefore obrious that she set great store by hir husband's letters to her - Extending over a period of 4 years from 19 %) to 11 d she could not have set so great a value on them her use of her affection for her husband not because of the tender sentiments extrassed in them for the passages in her diaries which will be quoted at some length presently show conclusively that within the first year of her married lif she express d the most unwifely sentiments towards her husband her reflections as recorded in her diary show that she regarded her husband with great disfavour and dististe and the marriage as a _ ast a failure and lurself as a most unfortunate woman Another of h r reflections also noted in her diary, as fir back as 19 0 relates to the vitil necessity of her continuing with her studies and qualifying herself to earn her own living if the occasion and necessity should arise It has therfore no sentimental value attaching to her husband's letters that led to the furious quarrel in June 1934 when she found he had taken them from her box in her room

Magistrate's unenviable Task

I find myself in the unfortunite pointon of having to act as the biographic of the matried life, such as it was of the professor and his wife Mibough the Junicipal inclusion which complian in relies to prove his charge of adultery are three viz., his wife's visit to Delhi alone with the accused the birth of a mile child to her on August 13, 1933 and the incident of June 17. 1941 at the accused is residence, it becomes necessary to consider the circumstances, under which each of those events occurred and that entitles a review of the whole of their matried life extending from October 139 or June 1941.

The complanant first met Bina Besnas in the house of a certain gentleman in Calcutts in April 1920 and the marriage was arringed by a daughter of the gentleman, the proposal was first made by the girls Parents and the complanant expressed his readiness through that lady; he proposed to lina herself in May and for her acceptance there was a formal engagement in that month! In July or August she changed her mind and wished to bresh off the engagement, she gives no particulty reason for that desire but ways she did not approve of his attitude in certain matters which she has not specified. She sives the complaining reasoned with her and talked her round and she withdrew her objections. The marriage tools place at Bhowanipore, under the Civil Marriage A on October 4 1920. She dense her hisbands a slightnions that marriage has not duly consummated and declares that she was a him, in the full sinese of the word, from the beginning. He proposal

however discloses her real sentiments about marriage in general and her own married life in particular. I shall quote four presents from her divry to illustrate the point —

(1) Intro of 14 4-1330 — To all appearance I am a married woman They say that marriage brings about a complete change in human nature In myself I find not the least change. Phere is no love in my heart my life is a failure. I reclise that all human desires are not capable of fulfilment. I had so many hope and apparations, all are now gone. Mr soul is desolate I am full of regret that I could not make one other human being happy, all his life he will be humted by regret that marriage brought him no happiness. What shall I do? To make him happy means a great loss to me. It is I who am to blame. I should have refused to matry him?

(a) 18 9 1930 - Our College closes on Friday We get a months holiday for the Pujahs Must I go to 'that' Krishnagar again?'

(iii) 24 9 1930— I have often mused of my husband and his home but it is not a peture of happiness and there is no hope I felt how dreary my life is Net I have afficient kindness, here, womanbod in me I have them all. But there is no one to be tow them on By marriage I gamed nothing and lost much

(iv) 25 10-1930— I often wonder why God inflicted such a marriage on me I felt no attraction to my husband. I thought it would come after marriage but the optiosite is hannening.

Unhappy Married Woman

Clearly this is the drary of an unhappily married young woman. The cause of her regret and unhappiness is not clear. When questioned on the point she iscribed two reasons which appear to me to be wholly madequate on view of the very strong feelings she expressed in her diary These reasons given are (1) her huband's unwillingness that she should continue her studies in Calcutta (2) the unkind treatment she received in her husbands house at the hands of his mother and sisters. Her husband does indeed state in evidence that after 1 assing her I 1 Exa mination in June or July 1930 he did not desire her to go on with her studies but wanted her to go and hie with him at Peni There are however several letters of his which show the contrary, they show that he was quite willing that she would live with her parents and study for the B 1 As for his mother's unkindness to her, her own diary shows it is not true On one occasion she did note in her diars that in her husband a home she always felt rather a strunger though her mother in law was very attentive to her comforts This does not prove unkindness to her her feeling of not belonging to her husband's home might have been due to something lacking in her. The complainant now of course declares that she was all along unwilling to leave Calcutta because of her attach-

ment to the accused. On the evidence. I find may if unable to state with any degree of certainty the cause of her unhappiness and I do not prefer to off rany of mion on the subject. But the fact remains that in the course of her married life she went to that hateful Krishnagar' three or four times and to I can only once. That she was unhappy and diseasisfied with her marriage which she regarded as a hollow sham and mockers is clear but that does not in itself prove that she was an unfuthful wife or in particular that she was unfuthful to her husband for the accused Her husband savs in evilence in chief that he began to suspect his wife in April or May 19,0 when he read 'Recollections of Ramesh Dada' but in cross examination he says he did not suspect her in 1930 but later That it could not have been so early as April or May 1930 will be endent from the fact that that obseene book was not published till September 1930, as appears from the Governmet Gazette of book publications Then there is his letter to his father in law (Lx I dated 1 10-30) requesting him to approach the accused with a view to securing him a good job in the accused sown firm or some other insurance company, on the ground that it would suit him to live in Cilcuita and Bina could go on with her studies There is another earlier letter of his to his wife (Fx Q dited 11 7-1930), advising her not only to get admitted into the Diocessan College (she had by then I resed her I A) but also giving her advice as to the subjects she shoull select On 13-10 1930 he wrote to his father in law- When Bina is so keen on studying for the B A in College I would not in spite of my own inconvenience stand in the way. So when she wants to join college, let her do so" These letters written by the husband to Bina (which she prized so much , clearly show that not only did he consent to her going on reading for her degree which necessarily meant her staying in Calcutta with her parents, but that he was ever asking a favour of the accused It is obvious that either he did not suspect the accused at the time or if he did he was conniving at things. His conduct was not that of a suspicious husband. There was not a word of warning from him to his wife or to her parents not a threat to the accused who was admittedly a frequent visitor to the house

Chronological Events

We come now in the chronological order of events, to the first definite incident when adulter; is alleged to have been committed not on a single occasion but over a period extending to three months. It is an admitted fact that on Innurry 26, 1931, Bina Sirkar left Calciutti alone with the accused, innaccompanied by any relation of either of them, for Delhi, that the accused rented a house there and Bina staved in this house the April 14 or 15 when they returned to Calciutti. Let us consider the wand the where fore of this tips to Delhi. So far as the accusal is concerned, the matter is simple to determine, in his written statement he says had to go to Delhi with his staff in connection with the work of the?

Banking Enquiry Committee, of which he was a member, Burt had been suffering from faver for several months from the middle of September 1930 and a change of climate was considered essential is neither her parents nor her husband had been able to arrange for the change, she accompanie I him to Delhi at the suggestion of Dr Bisir Kumar Mitter (P W 3) of the Science College, Calcutta, whose wife Lily stands in exactly the same degree of relationship to the accused as Bina viz nice of second cousin, call it what one will Bina's evidence is that she was desperately ill at the time and her father desputed of her life , she herself thought the end was not far distant and it was her brother in law Dr Eier Matter who put forward the suggestion that she take the opportunity of going to Dellin with her Birikika to recoup her health. There is however, an entry made by Bua herself, in her private diary, on 29 1 1931 (which date shows it was made after her arrival at Delhi) which shows that neither Bing, nor her brother in law no her Barakaka has told the truth The entry runs as follows .- My kaka suggested I should accompany him to Delhi I lunghed and sud 'I have been to Snitzerland in imagination . only Delfu remains (I take this to be meant as a brilliantly with eally meaning that she thought she had about as much chance of going to Delhi as to Switzerland) One day Sier Dula Babu came and sud, I hear Barakaka will rent a house in Pelhi for his stay there. Why not go with him and recoup your health?' Two or three days later I said to kaka Take me with you to Delhi Speak to my father and write a letter to Fent (referring to her husban !) That very day kaka spoke to father who said he had no objection but was afraid Promotha might object Nothing can be clearer, therefore, from this entry in her diary than the fut that it was the accused who first put into her head of her accompanying him to Delhi, that she accepted the idea with alterity and followed it up with energy, not without anticipation of some objection on the part of her husband earning his livelihood at distant Fent That she was not in goo i healh at the time will appear from the following hitters written by him to her had to her father -

(1) Letter of 13 10 19.0 (Ex D) to his father in law 'Please let me know about Birn's health"

(2) Letter of 11 10 193) (Fx F) to his tather in law - 1 received both your post-wish to day. On hearing of Binn's state of health Limb particularly anxious and sorry. Indice the circumstances, it is better for her not to come here (Krehmer) where there is no good doctor. Consult a good doctor and do as he advises. You have written about a change. I have absolutely no objection. It is he recomps her health. I have no objection with to her attending College.

(3) Letter of 19 10 30 (1 x I) also to his father in lan — I am glad to hear Bing has hot fid or her fever. She is constitutionally weak and her health is not good.

THE STEEL

Letter to his wife, duted 5 Fl 30 (Fx 6) from Fem 1 arrived here vesterday I am mi sing you sadly you will not get well if you remain depressed Frervone a lyising an immediate change for you '

(i) Letter to his wife duted 19 12 30 (Fx K) advising her not to attend College to the detriment of her health

The complainant has stated in Court that as he was not in Cilcutta at the time he cannot say whether she was really ill or how all she was. His case is that her illness was only a pretext to avoid going to him at Arishnagar and Fent and an excuse to go off to Delhi with the accused Assuming that she was really in need of a change the next question that arises is whether she went to Delhi with her husband's knowledge and core at "he maintains it was and he denies it. Before the idea of going to Delhi was put into her head by the accused as her own drary proves it was, there was some talk of her going to Kishoreguni. Wimensingh to stay in the family of her uncle Debendra Kishore Biswas , there was some tier of her roing to another uncle at Moulmein. In evidence in this Court Bu a has state I that she could not go to Kishoregung because ler aunt came to Cilcutta and the defence triumphantly referred to her I tter to her husband to that effect dat a 14 H 1930 (bx O/b). For her real falings on the subject we must again turn to her private diary which shows something very different to what she wrote to her husb in 1-entry of 14 11 19 , J Ex 11 9) - There was a proposal for going for a change of climate as I was Letting fever Father suggested Kishoregunj Other family members are not willing to go there any more than I am when father asked me I said no' Her feeling to wirds her husband at this t me are very clearly reflected in her private diary. On 9 11 30 she wrote therein her husband came to Calcutta on Novemb r I and left for Tent on November 4 when he first came she f it a ry will he s nt for her and enquired of her illness she replied to all his queries without so much as looking at his fa c. On II II 3) she wrote down further reaction on the marriage ties marriage without love is but al gul ties and a pollution of ones boil There is an entry of the prevous month (11 10 1930) which will allo throw some haht or hir movements and her attitude generally. The notes as entitled I collections of B naires and reads thus - It the time of my starting father was not at home to I could tot spak to him There was another reason for not informing him he would never have core nted if I had sought his permission. I boarded a bus hesitatin ly I thought father would sold me when he returns home But soo ; that a use of timidity wore off A line of my song flashed through my mad - In the wilderness of this world whom need I fear ? A great py came into my mind whom need I fear . What can any man . do? At most they can lure abuse at me There is evilence to when she went to Benarca with whom and why It is clear that it a clan lesting visit unknown to her father or her husband. She has

in evidence that she went to Benares with her mother. Her own diary proves it to be false

342

Delhi Incident

It appears, therefore, that her bodily well being, no less than her spiritual uplift and the cleaning of her fog of depression, rendered it absolutely essential that she should go to Delhi with her Bara kaka Was it with her husdand's knowledge and consent? He says that his permission was never sought On 23 I 1931 his wife wrote to him (Ex H) as follows - Bara Kaka is going to Delhi He has asked me to go with him as it would be a good change for me I may go with Bara kala We will probably be leaving to morrow a e. Monday, by the Della Express in the after noon By no stretch of imagination can this be regarded as a dutiful and obedient wife obtaining her husbands permission It announces the probablity of her going It announ ces an accomplished fact in the sease that it was impossible for her husband to stop it even if he had a mind to do so, she says she as lakely to start the next day. Her duary however shows she did not actually start till January 26 but how was her husban I to know that when he got her letter on January 26 saying she was off that very day From the complainant it was elicited in cross examination that he sent a telegram giving his consent to her going to Delhi but he says he was given to understand by his fither in law in a letter that Bina a younger sister and the accused a niece and Bina a mother would all be going with her and the accused to Delhi. The defence contends that he should not be believed because he has not produced that letter of his father in law which he says he has destroyed. It might equally be contended that as the defence has not produced the telegram they have something to conceil and the telegram if 1 roduced might disclose something relevant as to complainant sides of who were going to Delhi and on what cond tions he gave his consent

We must turn once more to her divry to see whether she wes going to Delhi as an invalid who was desperately ill or whether she regarded it as a very joil youting. On 20.1 1931 she wrote in her divry as follows—We strate I for Delhi by the Panjab Mul on the 20th night. I had a comfortible journey in a "9nd class compartment. Kals occupied jake class. I spent the night lying down. I went to Kakis compartment in the morning and had the with him. I had leop cutlet sandesh look to At mid day I had entry and rice and day, vegetables etc. At the 30 p.m. I had tee fried chira singers etc. Kakis proposed ve should have dinner in the restaurant car. At 7:30 p.m. Eval. called and sud "Let us go to dinner." I felt very happy before I started for Delhi. I am here alone but none the worse for it. The diet described above even if we leave the numerous et cetera to the imagination, is but ly that of a mornibund in and whose life was described to.

The situation is really extra ordinary 1 young woman aged 20 or 21 goes off alone with an elderly man aged 51 or 72, whom she no doubt calls Bara kaka but who is not so very closely related to her. The only intimation she vouchesfes her husband is that very likely she is going and that on the very next day. That is hardly seeking his permission or even ascertaining his wishes in the matter, much less is it giving him time to say anything one way or the other Assuming that her father did write and tell Promoths that other women folk of his family would go with her, it is offset by her own note in her diary that she wanted her father to write to her husband and that she anticipated objection on his part There is the further point to be considered that if complument was given the assurance that Bina would not go alone why was it that she did not go alone . Her answer is short and concise-no one was avai lable. One wonders whether all her sisters apparently she has at least two, if not three-were all buy studying for their I A and B A like their elder sister. If her mother could go with her to Benares why could she not go with her desperately sick daughter to Delhi . Under these circumstances it must not be regarded as unduly uncharitabe if people are so low minded as to regard the conduct of the accused and Bing as not wholly allove suspicion

It is in evidence that the husband and wife corresponded with each other while she was at Delhi and on two occasions on 25/2/31 (Ex. 16) and 11/4/31 even the accused wrote from Delhi to the compliment. In the first of these two letters the accused even invited the complianant to take casual leave and has them a visit which offer however he did not avail himself of The complainant swears that as soon as he got his wife's letter and realised she was there alone with the accused he remonstrated. When shown his letters carefully treasured by his wife (they do not contain any word of remonstrance or protest) he said he thought it useless for him to protest as he was faced with an accomplished fact. On the one hand I feel that safely tucked away as he was at Feni and dealing with a wife su h as this laly appears to be from her own diars, he must have found himself in an extraordinary difficult position She went off without his permission. Can it be with any degree of certainty that she would meckly have returned to Calcutta if he had ordered her to do so? On the other hand this extraordinary man saubsequent conduct is most difficult to understand On Binas return to Calcutta on the 15th or 16th April 1931 he went and stayed at her parent s house for a few days and then took her to Krishnagar where she staved with him for six weeks. He then brought her back to her parents' house and left her in Cal utta to resume her studies idmittedly he never uttered a word of warning to ansone If he di' suspect his wife s fidelity it would not have been without reason or ; fication One cannot help wondering what Dr Sieir Mitter whose

as he says stands in the same degree of relationship to the accused as does Bins and gives the accused a very good character as an affectionate uncle would have done in similar circumstances if his wife Mrs Lily Mitter had thought fit to go off alone with the accused to Delhi and spend three months there with him There are certain other facts which also go to render the complainant's conduct very curious. In a letter written to his wife from Fem on 17/7/31, he informs her he has applied for a post which fell vicint in the Delhi College to which his wife replies on 28/7/31 that Bara kaka has asked Kumud Sankar (* Roy) to write to the Principal of the Bindu College On 27/11/31 he writes to his wire (Lx P) that after living together so long he is finding single life very distasteful All I can say is that I simily do not know what to think Before leaving this Delhi incident reference must be made to the

evidence of the witnesses Mr Shamsuddin Ahmad and Badi uz Zaman The former only proves Bina's presence in necused's house a fact while is not in dispute Badi uz Zaman however, seems to prove adultery He is a motor driver aged 30 who was in the service of the lite J'aja of Azımgunı who was a member of the Council of State. He accompanied his master to Delhi in the first week of I chroars 1931 when the Council of State was in session. The house occupied by the accused is in the same compound as the Raja's separated by an extensive lawn Bada uz Zama's says he use I to see Bing and the needed billing and cooing in their housein his own qu'unt language he used to see her feeding him with bread an biscuits. On one occasion he saw them in bed in each other's arms His evidence however is worthless for two reasons (1) its inherent absurdity, (') the manner in which it was secured. He admits that the two bouses were separated by a vast expanse of ground and the interior of the accused s house was not visible from the Rajah's house. How then could be see so much? The easy reply was-Oh! from the garage, am I not a motor driver ? But then he had to admit that the garage does not face the accused a house Not in the least perturbed the smiling reply came that the garage has a back window through which he saw everything But what about purlahs and curtains in the accused a house? Why Apart from the absurdates of this story let us consider there weren t a 13 low he came to depose in this case. There is no mention of his name in the actition of complaint. The complainant admits that even after he l ul file I his compliant he hal no idea of this man s existence. Then a wonderful thing happened. His linger on reading through his wifes letters to him enquired of him if he knew any employee of the Raja of Azimgui 1 (This cannot be true for the Pala's name does not occur in any of the letters The complain int did not know any seriant of the Pais but he mentioned his lawver's simple query to his brother in law libhuti who in turn passed it on to his cousin Bakhina Ranjan Biswas this man is not a witness, he is sail to live at Arungani. It was he who traced out Badi-u-Zaman On the evilence of this gentleman I would not hold a corkroach guilty of misconduct

Bins a Revolen With Husband

In July 1932 Bina passed her BA examination and in September began her post graduate studies as a private student. Her husband save it was against his wishes that she did so, he wanted her to accompany him to Fem after the summer vacation but she refused. Burg admits the refusal but gives the reason for it On 12th June 1932 her husband wrote her a most insulting letter (Ex S) black guarding her and her whole family particularly her mother This letter shows the compliment in a really angry and bitter mood, he says he is sorry he ever married the sickly daughter of roor man whose mother is a shrew. He accuses the whole family of clinging to and fawning upon men with money and in particular to Barn Laka But here is somethin, which again leaves one guessingnot a word in this furious letter of 10 pages so much as writing at undue familiarity between his wif and her Bara kaka. It was not till 5th September 1932 that he wrote and apologised to her and enquired when she was coming back to him and telling that he missed her sorely. Her reply dated 11th September 1932 was that she was quite willing to return to him but not till her college closed she would then spend the vicition with him It was on 9th October 1932 that Rimal the son of her husband's brother in Live tracked her to I (n) The date is of very special importance. The complainant s case is that she left Calcutta suddenly because she found she was pregnant not by her husband but by the accused and hence her intelligent anticipation of future events prompting her desire to join her busband as speedily as possible. It is not in evidence when her college closed for the purah vacation of 1932. She says she was a private student. I am not aware whether that fact need have prevented her from going to her husband earlier than the four weeks that clapsed between his letter of apology and request to go to him and her actual departure. Be that as it may she went on October 9 1932 Her husband says that at once he noticed signs of pregnancy the presence of nurses and the cessation of menses vet he did not quest on her regarding her con lition till December This cannot possibly be true for several reason (1) immediately on her arrival he could not possibly have known whether her meases had stopped or not (2) as the child was born on 13th August 19 3 she could not have been pregnant as fir back as oth October 1932. That would make an abnormal period of gestition of ibout 3.0 divs. Taking the period of gestation to be 250 days at looks as af she must have conceived a the mid lie of November, 1932 when she was with the husband at F Apart from that, his own letters to her after she left Feni in April (and carefully treasured by her) show throughout he recarded the

as his own. The following are the letters —(1) dated 5th April 1938 (Fr BB), written the day after she left Fem—he says he misses her terribly and has lost his appetite so his servant Bhagaban gets all the luchus and patril bhagas. He then enquires, what about your chief write to me about your health (2) Letter dated 11th April 1930 (Ex CC) begging her to be very exceed about her diet and her movements He allow ants to know by what train she is coming to Fen from Chittagong (She had obviously gone from Fem to Chittagong and would lass through Teni on her way to Crientits). The letter shows she broke pournes for 2 days at Feni and then came to Calcutt.

- (3) The next letter, dated 1sth April 1933 (Ex DD) reads as follows, since you left vestered y my mind and heart are blank and youl I cannot enply anything I feel I cannot live even for a day without you On the night you left you lay best le me for one hour I can still feel the touch of your body. Binu my own now that you have become truly my own our herits are one etc.
- (4) On 2nd April 1933 (Ex FE) he wrote to her Pray to Col morning and night that you may be blessed with a happy hand-ome hoy
- (5) On 27th April 1913 (Ex. FF) he wrote. With the approach of night. I feel that if you were here. I would have hugged you in electron want of you. I have to hug my pillow?

These letters definitely show that the reconciliation after the quarrel in the summer of 1932 was complete and that they lived as man and wife and that she must therefore here conceived by her husband. In his evidence the complainant began by saving that his wife's confinement was pull for by the accused when confronted with two of his letters to his wife (I've V and W-written in July and August) he had to admit that he sent Rs "O to his wife and that this was paid to the hospital which charged 7/ per day for her lying in of 10 days. On the birth of the chill a telegram was sent to the complainant who on 14833 the very day after the child was born wrote to his father in law saying how glad he was to hear that mother and son were doing well On 17533 he wrote to his father in law (Fx \) that he was very girl to hear that a boy has been born to us There followe I numerous letters to his wife begging him to be careful about herself and the boy about the precautions she should take against his eatching cold even directions about fee ling him a Glaxo and enquiring how his hair is growing Admittedly it was he who chose the boy's name Arun Kumar In short tremendous enthususm on the part of the proud father His evidence in Court that that enthusiasm was all feigned and inspired solely by pity of the little fatherless child is not borne out by his letters or his conduct and I am very definitely of opinion that the chill is his How else can be explained his letter to his father in law dated 59 33 (Fx 7) asking him to invoke

the accused a assistance in securing him the post of Professor of Econo mics in the Burdwan College

The Closing Incident

We have now reached the closing incident in the married life of this unhappy pair, the quarrel at 1 Dr Rajendra Road in June, 1934 There is only the oral evidence of the husband that it occurred on June 14th and of the wife that it was not till June 23rd. There is some slight corroboration of the wife's version in the evidence of Dr. Sisir Mitter though I am not satisfied that he is a wholly di interested witness. There is nothing in writing either in the shape of a letter or an entry in any diary, to fix the date of the quarrel The complainants, however has closely questioned by the Court when he was examined in chief as to his movement just before and after the quarrel. He says he came to Calcutta for the summer holidays on June 19th or 11th and stayed for 2 or 3 days at 1, Dr Rajendra Road when there was the final rupture After that, he went off to stay with his broker in-law Bibhuti at 23/2 Guru prosad Chatterice Lane for yor 6 days he left for Fent on June 30th or July 1st That looks as if the quarrel occurred some days liter than the 14th June. In cross (xumination however he made an attempt to increase the interval between his leaving his wife's parents house and his return to Feni on June 30th by saying that from Bibliuti's house he did not go direct to Beni but via Krishnagar where he stived for 4 or days to ruck up his luggage

How They Quarrelled About The next point for consideration is what they quarrelled about The husband says he was only realing his wife s diary and her letters. I am not sure what he meant by her' letters-whether he meant as own letters to her which were in her box or letters written by other people to her with a suggestion that they were the accusade letters to her-I doubt if the latter was intended. Bina an I the accused were all along living in Calcutts and there could not have been much occasion for them to correspond. It may reasonable be assumed that the complument was looking through his own letters to her which she had carefully put away in a box. That is what Bina actually says she had done. She lowever says her hast and had taken them out of her box and put them away in his own. Hence the quarrel The occusion of the quarrel is clear but what was the real cause . I wife does not normally order her husband out of the house merely because she has found I im reading her personal darry and his letters to her. That hardly furnishes sufficient provocation to the wife to fly into such a rage and take such an extreme step. One cannot help wondering whether the real cause was that the husband had been threatening his wife with legal action, hence his anxiety to get back his letters to her and her anxiety n

to part with them as if her character could be indicated only with the help of those letters

Incident of June 17

There remains the final allegation of a lultery on June 17th 1934 in the bed room of accured a first. One hardly expect evidence of eye with nesses in an adultery case but it has been offered in this case-not, I fear with any measure of success Complainant and his brother in law Benode Bisnas are the eye witnesses Let us see how they came to set out together at 2 P M on June 1'th for the Hindusthan Buildings Bibhuti and Benode married the complant ant a sisters. The complainant having been turned out of his wife s house was staying with Bibhuti to whom he hid spoken of the finil break with his wife at this juncture according to the complainant and Bibhuti Benode comes to Calcutta from Nada or June 1'th at 10 A M unanounced and unexpected neither Bibhuti nor the complainant had asked him to come-what brought Beno le to Calculti on the fateful day? He says he had heard that complainant was in Calcutta he lad long wanted to secure the halia Agency of Accused s firm he had never met the accused an I had not written to him Hence his arrival in Calcutta at the psychological moment. Realising the weak ness of the allegel coinciden e in cross examinat on he attempted to prevariente he really came to Calcutta on the 16th went to Kalighat and teturned to Cilcutta on 1"th-as if balighat is out of Calcutta Be that as it may Promotha Earlar was approached by B no le to take him to the accused a residence Promotha says he agreed to do so he says he nent with a double purpose-to introduce Benode to accused and to trap his wife if 1088 ble but without disclosing the latter motive to Benode This in itself sounds improbable. They all went at B bhuti a house. Promotha had told Bibhut; all about his quarrel with his wife. It is more than hich that he would also tell Benoie 1et Benode supports complainant in muntaning that he was not told they were soins to accused a house to try and catch him in a compromising situation with B na Incidentally in the petition of complainant Benode is des ribed as an acquaintance as if it was f It that it would be too much of a good thing to say that the only eye witness to corroborate complainant was his brother in law

Having arrived at the Hindu than Buillings complainant says he enquired of the darn in at the entrance whether accurs d was at home and was told ie was not He and B no le therefore wutel outside for half an hour Complument saw But arrived in necus des green Siloon Cir It no le says he did not see her he was looking in the opposite direction says the complain ant smoking a cigarette. This is only to keep up the story that Beno le was kept in the dark as to the real purpose of com plainant a visit. I ven after B na a arrival complainant an l B no le writed half an hour outside. It is necessary of course to give the guilts couple

time to undress and get into bed before they can be discovered. After that reasonable intent, complainant and Benode marched upsturs, met a solitary servant in the corridor, ignoring his request to them to sit in a waiting room burst straight into the accused a bedroom, to find them in bed The story is not convincing. The accused sixs he has many servants living on the premises and it would not be possible for any one to walk straight into his bed room. It is true the complianant is fimiliar with the accused a flat, as he admits he has been there on several occasions at accused a invitation, he might therefore very well know which is the bed room. But the accused would surely hear two people coming up the stairs and walking along a long marble corridor before they got to the bed room The complament realismer the inherent amprobability of his story when questioned as to what shoes he wore said he had on Tubber shoes, Benode of course, not being in the know wore ordinary shoes-he could hardly with any degree of consistency be mule to wear rubber shows. The story that accused a hedroom was unlocked also carries no conviction. Finally there is yet another consideration of probability which imitates against the story set up. If Bina had turned out her husband three days previously it is extremely doubtful if not knowing where her husband and what he was up to she should have the hard hood to visit the mended's flat on July 17

Delay In Instituting Case

Finally there is the matter of S month's delay in instituting this cale Unless some reasonable explanation of the delay is forthcoming it inexestably draws suspector on the tardily made allegations. It is in evidence that there was the husband's notice in the Stateman in () tober 4931 This certainly proves there was a break but that fa t is not in dispute At the time of that notice complainant sent a registered letter to his wife which she refused Complainant has not produced it. The defence contends that its non production proves that it contained no allegation of miscon duct It was on I chruary 2 1333 that complain int came to Calcutta not to file this complaint but to attend in examiner's neeting. I cannot under stand what he was waiting for as he stated in evidence that as for back as October 1 3 he wanted to get rul of his wife. It was Jabhuti who urical him to do something in the matter he slowed a copy of the 'khealt' of February 7 193) and told him (1 it his wife s name was being bandu I about in connect or with the accused. The complainant says he then went to his Solicitor with a view to it stituting divorce procee

dings, it was only on their advice that Ic start d the present criminal case All I feel called upon to say that he was very bully a lyised A divorce case would have been the proper course to take The complair

explination of the delay are three-fold -(i) his place of work (Lens 15 30) mil s from (il utt i)

(ii) the accused is a powerful and influential man against whom he did not venture to proceed

(iii) he had no opportunity to act earlier

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None of those reasons as adequate or convincing He came to calcutta in October 1934, he consulted lawyers and the result was a notice in the Statesman' There was nothing to prevent his taking legal proceedings then IIIs fear of the accused as a rich and influential man cannot be regarded seriously. The inordinate delay in instituting this case, therefore necess wily tells against the credibility of the story

In conclusion I have said all I have to say about the Delhi incident About the paternity of the child I have not the slightest doubt that the complyment is the fither About the incident of June 17, 1931 I am unable to accept the evidence

On the evidence therefore I find the charges are not sustainable The accused is accordingly acquitted

THE MOST MOMENTOUS CRIMINAL TRIAL The Lahore Conspiracy Case

HAPDIAL'S EXPLOITS IN AMERICA AND INDIA Judge on Pinilers Claim to Clemency

(By Lt Col A A Irvine CIE)

The trial of the Durtmoor convicts was a big trial, both as regards its importance and the number of the accused persons and witnesses who took part in it Amongst other big trials held during comparatively recent years may be cited that of the thirty seven Camorrists which began at Viterbo in March 1911 It lasted for more than a year, and involved three hundred sittin_s of the Court

The trial with which I am now concerned was known at the time as "The Labore Conspiracy Case' and the then Lieutenant Governor of the Punjab on the occasion referred to it as the most momentous criminal trial of this generation In view of its importance to India during a period of especial stress His Honour's pronouncement cannot be considered to have been an over statement of the case.

24 Death Sentences

This trial in respect of which it fell to my lot to be President of the three Special Commissioners who formed the tribunal took place under the Defence of India Act of 1913-an 1ct framed 'to secure | ubhc safety and the defence of British India and for the more speedy trial of certain offences" It commenced on the morning of April the 26th, 1915, and our lengthy judgment was agned by us nearly four and a half months later before writing the judgment we had to record tabulate and pass under the most careful review the statements of nearly seven hundred persons, and had likewise to examine a stupendous mass of printed and typewritten documents together with exhibits of every description ranging from revolutionary flags to bombs fishioned out of ordinary brass ink rots

The printed complaint filed by the Covernment Advo ste divelosed the names of cight who accused some of whom were absconding at disx't four cf whom actually appeared before us in the dock. Almost all of these were Sikhs, there were a few Hindu, Mohamed ins were conspicuous by their absence. At the co-clusion of the trial we found it meanment on us to pass twent four death sentences, many olders of the accused being sentenced to transportation for life or to lesser terms of imprisonment. The remainder were either discharged during the course of the trial or were finally accounted.

My two colleagues on the bench of Commissioners were members of the Indian Chil Service (tho like investi had been for several jergs a Sessions Judge in the Punja to Commission) and a thinguished Indian member of the Iahore Bar Our powers under the Special Act made our work justicularly responsible since according to its mandworp provious our judgment was to be considered final and conclusive while there was to be no appeal from any order or sentence passed by us. The exercise of elemency was of course reserved to His Freelines the Victory and to His Homour the Deutenant Governor of the Purish

In the case of one convict His Honour commuted the death sentence to one of transportation. Subsequently in reject of to less than sizeen persons the death sentences were commuted by the Covernment of India, and on the controversy over the action of the Covernment I refer not to commune.

Before coming to more intimate details of the trial which I think may prove to be of interest it seems desirable to recount a brief history of ever to which led to the passing of the Defence Act

Rar Dayal

As fir bick as the year 1907 a fiery wave of sedition had blized its wave across India. In Calcutta and other lives it had constitued to smoulder and by 1912 it had travelled to the Parific Covid of Nurrica where the conspiracy with which it was our duty to ded but its origin. The head quatters of the Indian revolutionary latty at first in Vancouver were latterly centred in Sun Francisco.

At about the end of 1919 there arrived in that region one Hardhal a noted Hindu seditions who commen ed delivering a series of lectures on Athersia. This individual although he had been awarded by the Lunjub Government and had cupoved almost to its conclusion a scholirship at Oxford had for some raw-on lecome imbued with a matignant latter of all things Iritish. Abandoning therefore the cult of Athersia for that of revolutionary folius. Hard all proceeded during 1913 to tour the country spreading the flame of schings,

raising funds and securing followers, with the avowed object of waging war against His Majests the King Emperor, and of massescaring or diving out of Indra every man, woman and child of European extraction. It may be said at once that like so many of his fellow agitators, Hardial was extremely careful of his own skin. Long before the storm had broken in Indra he had left his dupes to look after themselves and had incontinently vanished.

There were in those days, scattered over California and Oregon, large numbers of Sikh emigrants men of magnificent physique, well fed, earning high wages, hardened by toil on the fruit farms and in the timber yards among these unfortunate, credulous persons the astate Hardial found, is he expected, abundant material on which to exercise his mechanistics. Forthwith, accompanied by other agitators as virulent as himself he multiplied his lecturing tours, and in addition to them, initiated a urriculum of selutions propagnida.

Chade Movement

His chief instrument of propaganda was the Ghadr' (Mutiny) newspaper the first issue of which bore the date of November 1st, 1913. Its police advocating wholesale externmentation of the white monkeys' left nothing whatever to the imagination. An ordinary issue was one of ten thousand copies and besides being broaderst over the Pacific Coast, it was smuggled into India by means of the usual postal channels. In December of the same year, it began to appear with a yellow corett, without a comparation of the same year, it began to appear with a yellow corett, without a construction of the same year, it began to appear with a yellow corett, without a construction of the same year, it began to appear with a yellow coret, without a construction of the same year, it began to appear with a yellow coret, when yellow core is the Hindu religious colour and that in olden times Rapiut warriors 'cone d to the death' were accustomed to smear their faces with the yellow furners before engaging in battle.

Copy of the 'Ghadr issue dited January the 10th, 1914, is paticularly worthy of remark. It contains an account of a meeting at Sacramento, which was addressed by Hardril. Lantern sudes of famous solutionists, and municers, along with revolutionary motions, were dislated, and Hardrid deliberately proclumed that Germany was preparing to go to war with Fingland, and that the time had arrived to return to In his for the coming rebellion. Reference was made to the Muting of 1877. At a San Francesco meeting on march 23th, 1914, Hardial anmounced his intention of proceeding to Germany to prepare for the revolution that was fast anoroaching.

Now, the above dates and the tenor of his pronouncements are full of significance when we remember that in May, 1914, the tustian Fingeror toll his Ambasador in Constantinoul, that 'A Furopean was nas inentiable,' that the Serajeto assessinations occurred on June the 5th of that year and that England entered the Great War on the 4th of Vugust The question naturally sizes, from white conrect ill Hardal

derive his foreknowledge of events which he proclaimed in the preceding January?

However the max have been as the result of his inspiration a multitude of Sikh emigrants, during and after July, 1914 began returning to India by Japanese vessels, stirring up trouble and enlisting assistance in the share of men and mones at the virious ports on route. Their plan of curping included the masseries of Furgierian and Indian logalists, the seduction of troops students and villagers—union with foreign enemies, bomb making and the looting of transities.

The Punjub has almost always been fortunate in its rulers, and in that time of peril had for its I truttenut Governor a man of outstanding strength and person lits. Many of the milcontents were interned soon after their arrival whilst others who had league was to follow them. I, presumably because I chineced to be the Prevident of the tribunal was to be reserved from the Poli or a warning that all parels become type written additions to this we received from the Poli or a warning that all parels become type written additions a might with with utages be coaked in water before being opened. One such partel rechted me and, obeying instructions. I immerced, it for some time in one of those one tubes which, probably from the days of Warren Histings have continued to do duty as baths all over India Recontents however proved to be nothing more daily than a sol lien burn lie of worditi explosive literature. Forwarded to me by a lunate http://www.wischantermic.parta.s.

The well intentioned priceutions of the police for our personal safety were sometimes rither embrissing. On returning one evening to my hole! I found seated in front of my room a still wit gentleman armed with a mighty lathi I was informed that he had been detained to act as my guard. At my request he disappeared, but I believe afterwrides prosecuted his witch and wordless obstrusted; somewhere on the Potel Termiss in the guise of a bixar sweetiment seller. A lathi it may be explained, is a seen foot staff of male lamboo transhed to one cite with brass or iron knobs. It is much in Favoir with the wish persentry for reducing to an unrecognizable pulp in enemy a unation. The Vember of Parlitiment who once discribed i rotons assumbly of lathityalas as a 'troad armed with walking sticks, was even more thin usually wide of the mort.

Interesting Fxhibits

The monotony of the duly routh a was often related for judges and accused alike by the production of expecually interesting exhibits. For ulstance, a big trush sured by the Customs suit orities would be opened in court to the parge a quantity of harmless finey ware pen trans blotting-looks and the like. But out of a fite bottom would spayer a store of

pistols lincksans and copies of the 'Ghild' newspaper. Then there were the ink pot bombs and bombs mide out of heavy brass water vessels fitted with screen tops intended for the blowing up of bridges. There were the revolutionary flags in appearance somewhat resembling the intendal flag of Bolgium. These were three tipied, blue for the Milds middan (why green was not chosen. I cunnot say), red for the Hinds (Who was to bathe in the blood of the oppressor), and yellow for the Fikh (symbolical of his approaching reversion to Hindiusian). To my mail the most noteworthy of the manifold exhibits were the illustrated copies of the Bomb and Poisson Manual's the contents of which may not of course be divulged. They emanated from Parls to which city an emissary of the consultrators had been sent with a view to his setting up a bomb factory in Calcutta. after receiving instruction at the hands of Madame kama and Kirshna Varma a Bengali, the well known Indian anarchist of the lars centre.

A morning spent over such exhibits would always send the accused particular interestedly to their midday meal and would afford the tribunal material for discussion during the luncheon hour in our hitle returned from In that very sultry refrectory we two effects I uropeans would observe with wonder and admiration the meal of our Indian 'conferer A strict vegetarian be was went to consume in addition to a platful of dates a number of oranges a big bunch of bannas and an entre melon washed down by several cups of very hot and very sweet to Its fart most resurredly agreed with him, for a more genial and pain systems companion to work with could not any where has been discovered

Perfect Gem of Officialdom

It was during one of these hours of a relaxation that I received a communication which I regard as a perfect term of officialdom. It took the form of a letter from the then Registrate of the Chief Court, who was responsible for supplying the tribunal with stationer; He wrote concerning his anaxiety about thee consumption of foolease pencils and 'Relief' inhibitive was taking and would I look into the matter and report, I am afra! that my reply was briefly to the effect that I had somewhat more important work to do during some twelver hours each day (in and out of court) than to keep as eye on 'Relief' mobs et id genus omne!' Relenting however, at his exident distress' went so fir as to add a posterity informing him that those of the accused who could nite were allowed pecils and piper for note making. Fuither, that I personally broke the back of one 'Relief' mob daily, that my I C S colleague wrecked duly no less than three, whilst our Indian conductor contrict to make one inb last him for a week—as one might reduly deduce from a sample of his hand writing.

During our four and a half months as jail birds we were extremely ortunate in the matter of health, suffering from one the minor malades inseparable from very hard brum work in very hot weither. In my own cree the male ly took the form of incoming. Instead of getting to sleep at high I would find investig evaperatingly withfull redoining in my man I such questions as whether Witness N were sufficiently corroborated by Witness N in his story about the pistol used in the / decolve—in! so of his a prinaces for incoming the ordinary modern more distringed on the processing in proved absolutely usedess—and then of a sudden. I chan ed upon a sovereign remedy.

In the eatalogue of a Lomban book seller I came across a lit of the works of that great prince of story tellers the late Jules Nerne of blessed memory I had not rad one of them since my schooldars but the witcher of them once more fastened upon me rousing the desire for an absorbing yearn unburdlened with sex appeal and the cocktail vagaries of so called Bright Young Things In due course there arrived a dozen paper-covered volumes and there after for an hour or two each night I pournered round the Moon sped on a raft to the molten centre of the globe explored the depths of the sea with Captain Nemo I the a bad drein the Lahore Conspiriey Case field from my consciousness until the following morotoge.

Judgment At Simla

When, at length the strements of witnesses and accused along with the arguments of counsel had come to an end by permission of the Government we reparated to the cool heights of Simble to consider and write our judgment. In a room littered with formidable piles of documents and law books we set to work our tool for the first few days bein, impeded at interrals by the efforts of a visitor in a neighbouring blo k of the hold to require with indifferent success the melody of. Where my Curvan has Pested, 'Luckily for us his leave was on the point of expring his cara 'Van moved down to the Plains and we had peace.

Our judgment written we proceeded to Lishore to deliver our sentences in the Jail which for the occasion was guarded by troops. There had been reason, it appeared to anticipate a possible massed attack upon the buildings by brands of maleontents who had not yet been hid by the heefs however nothing of the kind occurred.

One Regret

We had been able, I am glud to say to embody an our judgment our warm appreciation of the work of that much maligned body the Indian Police. Always in danger exposed to every sort of threst and inducement on the part of the conspirators who after all were their own countrienen the personnel of the Police Force remained magnificently loval to their daty. Indeed throughout the rest conglomeration of endence produced before us, we learned of only one instance in which a member of the

police had wavered in his allegiance, that of a constable who had gone so far as to agree to sit on the fence—and see which way the wind might blow !

The finale of this big trial left me with one regret. It was this—thit when so many commutations of sentences were considered necessary by the Government the exercise of elemency was not extended to Yeshao Ganesh Pineley. Mahritta Brahman of the Poona district. Of his guild there could be no question, but I think this before the end came he had realised that he had been add adope by others that Englishmen were not the tyrants that he had been led to beheve. He was splendidly staunch to his fellow conspirators, his behaviour in court earned our respect. In short revolutionary bomb maker seducer of troops though he had been 1c was essentially a gentleman—"Indian Empire Review?"

PATRIKA CONTEMPT CASE

I ollowing is the detailed judgment of Mr Justice Costello in connection with the Pitrika contempt of court case -

I entirely agree with the views expressed by M3 Lord the Chief Justice Fire Brhadur Supru in his argument on befulf of the Respondent Tushri Kauti Ghosh in the the submission that the article which appeared in the "Amrita Bazar Patrika" on the 23rd March last did not refer to any case pending before this Court or to any case decided by this court either recently or in the past and that assuming in any view of the mater that the article in question amounts to contempt of Court it is at the most rechnical contempt and as it does not seek to obstruct the cause of justice or interfere with any trial this Court has no jurisdiction whatever to take proceedings by way of summary procedure and that the proper procedure should be by information under section 191 of Cr. Pro. Code

The first question we have to determine in this matter is whether the article referred to in the affidavit of Mr Collet does amount to contempt of Court and at the outset I think it should be emphasised that we act in these matters not to defend the dignity of the Court but to safeguard the proper administration of justice and to ensure as far as possible that the confidence of the Public in that administration was not to be destroyed or in any way diminished. In that connection one should bear in mind the weighty words of Wills-I who delivered judgment of the court in the case of here Diess (1906 I K B 32 when he said that the principle which is the root of and underlies the cases in which person have been punished for attacks upon court will be found to be not the purpose of pro tecting either the court as a whole or individual judges of the court from a repetition of them but of protecting the public and specially those who either voluntarily or by compulsion are subject to its jurisdiction from the mischief they will incur if the authority of the Tribunal be undermined or imputed Wills J cite a part of the undebrered julgment of Wilmot

C J in Rex r Alman (1765) where he said that attacks upon the judges excite in the minds of the people's general di satisfaction with all judicial determinations and whenever men's allegiance to the laws is so funda mentally shaken it is the mo t dangerous of struction of justice and in my opin on calls out for a more rapid and immediate redress than any other obstruction whatsoever not for the sake of the judges as private individuals but be suse they are the channels by which the Ling's justice is convexed to the people. To be importial and to be universally thought so are both absolutely necessary for giving justice that free open and unimpaired current which it has for many ages found all over this Lingdom. These words of Wilmot (J have been quoted with approval in innumerable cases throughout that 170 years which have elapsed since they were written and despite the doubt as to their applicability to the present instance whi h Sir Tej Bahadur Sapru sought to establish they mut be taken to constitute the appropriate eriterion and the right cannon of interpretation for u e in a matter of the kind now before us Alllying the principle enuncrited above I can only come to the conclusion that the article is not only a contempt but a contempt of a very serious nature in that the first paragraph of the article is directly calculated to instil in the min is of the people a mistrust of and diseate faction with the administration of justice in this presidency. It seems clear that the object and intention of the attack was to induce he public at large to believe that future cases in the court will be dealt with by Judges who are no longer free from outsile control or influence specially in proceedings to which the executive in some form or other is a party or in which the executive is interested more scandulous and my chievous assertion against any court as such it is difficult to imagine. To call the cort of statement published or permitted to be published by the Pespondents in this case a fur comment or a mere technical contempt is to my mind an ertire misuse of words and is a contention which must be rejected. It is to be observed that the question whether a particular publication be libellous or contemp tuous and the construction of that publication is as has been said in many instance a question of the Court which deals with the matter -see per Paterson J en re (ranf rl This brings me to the question of the juris liction of the Court to punish a contempt of this nature in summary proceedings such is is present before the case I have just referred Court itself because in the -Crawford's case it had been objected that the court could have no general power of commitment for libel publishe lout of Court Interson I in the cause of that case sail that in Ice e ilman there was a very learned judgment by Chief Justice Wilmot in which he satis-factorily slowed that a Court of Record has power to quanish by commitment for contempt or libel published while the Court is

sitting Paterson J. then stated there must be a choice as to the mode of proceedings for he (1 c . Wilmot C J) says that the punishment may be by indictment or committent for contempt. He treats it through out as a matter for election " Laterson J then held that the court hal the power, i e to commit and stated "that is clear law" It has been strenuously argued in the proceedings now before us that as there is no question of a contempt in Facie Curi ie or in connection with a pending or recently determined cause. This court although admittedly a court of record has no hower to deal summarily with the offender. There are however many authorities for the proposition that it is well within the competency of a High Court in India to deal summarily with a contempt consisting of scandalous or scurrilous comments made in connection with a matter already adjudicated upon and in this connection having regard to what has been already said by My Lord the Chief Justice, I need only mention the case of In re Satjabodha Ramel andra Ada Baddi, 47 Bombay 76 where Martin J referred with approval to the judgment of Wills J (from which I have already quoted) and to the undelivered judgment of Wilmot C J He also referred to several previous eases in the Bombay High Court in which similar points had arisen. I am wholly at a loss to understand how it can be contended that it would be right to proceed by way of summary procedure in a case where a scandalous attack had been made upon a court by re son of something which had happened in the past but wrong to proceed in like manner where scandalous attack is made upon the court which from its very nature must have a disturbing and indeed permeious effect upon the mind of the public in general concerning the nurity and impartiality of the adjudication of every succeeding case coming before the court or at any rate in connection with the ever constant succession of cases in which in some share or form the executive is a party interested. In my opinion to endeavour to proceed by way of information in case of contempt by scandalising the whole court would be to attempt something which upon a reasonable visualisation of its mentable concomitants and implications would appear to be not only patently nconvenient and unseemly but also practically impossible for Tel hadur capru based the whole fabric of his argument about the question risdiction upon the dictum of Lord Morris in Velecites St Julyn h has already been commented upon by my lord and on the strength it one authority the learned advocate I as invited us to hold that the ent of Lord Wilmot C J has long since ceased to be a correct ation of the law It cannot be doubted and indeed it is beyon!

ques that if the views expressed by Wilmot C J hold good and apply in this unitry then it is clevily completent for this High Court to proceed by way summary procedure any case of contempt by sendalising the court am so the whole of Sir Tej Bihadur Sajin s arguments falls to the

ground The learned advocate found himself bound to admit to the fallest extent that the judgment of Wilmot C I has indeed been quoted with approval and the doctrine applied in a long series of cases many of which are tabulated at n 30 Sir John Fox's monograph on 'contempt of court" to which "ir Tej Rahadur Sapru referred as lending support to his argument It is to be noted however that Sir John Fox at p 33 of his book affirms that by a series of decisions and by citations Wilmot's doctrine has become part of the law of England though he queries the question whether there is any solid ground for the contention that it was the law by immemorial usage in the year 1760 Sir Tel Bihadur Sapru was quite unable to place before us even one case in which Wilmot's doctrine has been dissented from or even adversely commented upon by any court with the solitary exception of a dissenting judgment by an Irish Judge Fletcher J in a case which has never been properly reported As I indicated to hir Tel Bahadur Sapru in the course of his argument it seems to me to be asking too much of his or any other court to invite it to reject Wilmot's doctrine on the strength of this one dissenting opinion which stands alone in the long catenation of decisions agreeing with the principles laid down in Alman's case. That the doctrine enunciated by Wilmot and the procedure approved by him are still valid and subsisting in England is in my opinion quite clear from the judgment in Perrs Graf (1900) 2 Q B 16, Rer es Dates (Lhi Sufra) and Rer es Fliter of the New Statesman (44 T L R 301) to which reference has been male by my Lord the Chief Justice It seems to me therefore with all possible respect to Lord Morris that his lordship's speech in Mcleodie 51 Aufyn cannot be taken as being a correct enunciation of the law if indeed it was really intended to be so It may well be the noble and learned lord was doing no more than stating as a matter of fact that the proceedings by way of summary procedure were obsolete—obsolete for the reason that with the spread of education in Ingland and the growth of a wide spread healthy public opinion and in Leneral respet for the administration of justice oceasions for resorting to summary procedure in cases of contempt by scandalising the court had been few and far between if not wholly non existent. It has pened that the point now under discussion came before the High Court of the Irish Pree State in the year 1925 in the case of the Attorney-General vs Scan I O helly (1978 T L) when a Bench consisted of Sullivan P Meredith and Hanna J J held that the committals for contempt of court by scandalising the court itself have not become obsolete and that the dictum to the contrary in McLeod re 'd Aubyn (1899) 4 C 349 cannot be accepted as accurate having regard to the subsequent decision in Rex es Gray (Lbi Sufra) and hex es Flitor of the New Statesman In O Kelly s case as a preliminary objection had been raised that the court bad no jurisdiction to entertain the application made by the General that an order of attachment should used against the

Nation newspaper Sullivan P in his judgment said that in order to appreciate the argument that was a lifer-sed to the court on this preliminary point and to rule upon it was necessary to consider in the first place the origin and a ture of the power to commit and then he stated that the opinion of Wilnot in Rex is Alman is regarded as authoristire on this question. It is referred to by Pailes C B in Alloring General is Austonia 32 L R Ir 220 and I quote the judgment of the Chief Baron from the report of that case at page 271°—the judgment of the Chief Baron forth in full the opinion of Wilnot C J—"and then Sullivan P quoted in extense the judgment of Lord Blackburn in Shipworth's case L R 90 G 230 at 232 and proceeded thus—

The power so didned has been excressed when the occasion required.

by the Courts in England and Ireland, not only (1) where some contempt has been committed in the face of the Court or (2) where comments calculated to interfere with the course of justice have been made on cases pending in the Courts but (3) where scandalous matter of the Court itself has been published. This proposition was not disputed as regards the first and second classes of contempt I have mentioned, but the opinion of the Privy Council in McLeod rs Si Aubyn (1699) A C 519 was relied on as showing that committals for contempt of Court by scandalising the Court itself have become obsolcte In view of the subsequent decisions in England in R v Gray (1900) 2 Q B 36, and R V Editor of the New Statesman (44 T L R.301) I cannot secept the dictum in McLeod's case as accurate. In each of these cases the English courts recognised and exercised the jurisdiction to punish on summary process the Fditor of a newspaper for contempt of court an publishing scandalous matter of a judge with reference to his conduct in judicial proceedings

Hanna in his judgment (at p. 330) touching the question of whether the procedure by attrahment was one within the competence of the court expressed the opinion that it was and that it was not obsolete or in any way confined and said that he could not accept the arguments that where the contempt was in Jane Crouse the cases were always dealt with either by the judge himself or by the court nor the view that contested cases of consequential or constructive contempt that is those other than those committed exface ensure were always dealt with before jury by indictment. The learned judge that said. The position of this power of attachment is made clear by the judgment in Kessanes case (c.2.1 R. Ir. 220). Each of the three procedures was open for contempt of court. The cases show that for many years before the hearing of Meleot & St. Malym (1870) & C. 530 the practice of proceeding by attachment had not been used, so much so that Lor! Merris attacl in that case that it had become obsolute. However the may be, it is clear that it has been frequently resorted to both in

England and Ircland in the su ceeding veirs during which the Press attained such a widespread influence so that, though it night hive been at one time dormant it had at the date of constitution become a living procedure, with all its ancient powers. The lattet ease is but a few weeks ago, P 1 the Indian of the view Statestian (44 T L R) reported in the current Times Law Reports.

Meredith I although differing from the other members of the court on the merits of the particular case acreed with the President and Hanna I on the question of the extent of the juri diction of the court

In my opinion it cannot be gains ud that courts of record have an inherent power of punishing and in a summary way any act done or writing published calculated to bring the court or a judge of the court into contempt or to lower its authority a e a class of contempt characterised by Lord Hardwicke in re Read and Hugg nson (1742) 2 1 T K. 471 as seand thising a court or a judge) that is part of the common law of England and was so at the time when that law was introduced in India in the 18th century and then clorward administered by the courts to this country. Thus it comes about that the High Courts in India have inherited a similar power. It happens that there does not appear to be any precedent exactly on all fours the present proceedings with the exception of a case to which I shall refer in a moment but there as appears from the judgment delivered by my Lord the Chief Justice and as already indicated by me a number of decisions sufficiently close and analogous to the present case to warrant the assumption that the powers of this Court are wide enough to enable it to deal with the Respondents herein in a summary way and in my opinion this is essential where it was desirable for action to be taken shortly and summarily owing to the obstruction to the administration of justice created by the precise nature of the allegations contained in the article and its mischierous effect in the minds of the public and in particular of all higgints and accused persons Neither Sir Tej Bahadur Sipru nor Mr & N Banerji were able to place before us a single example of a contempt of court having been dealt with by was of information or by other method than brers manu but on the other hand there is the case of an ic an idrocate of Allahabad 3) All L J 125 (which furnished the excition mentioned above; where it was definitely held by the Mahabad High Court that the jurisdiction of the court to punish every contempt is not confined to cases where the ispersion which is alleged to amount to contempt is a reflect on upon a particular Bench in connection with the conduct of a particular case but extends to cases where a general aspersion is made upon the character and capacity of the court or a judge in I nendently of any case. The cases of once If hel Hassan Januar 45 711 and herr Gras (1900) 2 Q R D so were relied upon It har that Eir Tey Bulandur Espru appeared also in the Mahabad ca

Advocate for the respondent and he appears to have then put forward the same kind of argument as that which he has advanced in the present Proceedings before us, on argument largely founded on the dictum of Lord Morris case with regard to which the Allahabad Beneli said as follows—

Once it is conceded that to scandalise the court is a contempt then any publication which scandalises the court and lowers its prestige is clearly a contempt even though there is no record that similar publications have been held by the courts in the past to constitute contempt As we have already observed, general aspersions upon the character and the capacity of the court must be comparatively rare and the absence of any reports of such cases in our view, affords support for the contention of learned counsel for the opposite parties Learned counsel further contended that the remedy where a court and not a particular judge has been defamed should not be by way of proceedings for contempt of court but by criminal proceedings at the instance of the Government advocate under the provision of section 191 of the Cr Procedure Code. We are unable to agree with this contention The fuct that proceedings may be directed aguinst a person who has defuned the Courts generally is no reason for holding that he may not be proceeded against for contempt of Court Criminal proceedings as well as contempt proceedings lie against a person who has committed contempt of Court by indulging in illegitimate criticism of the conduct of a particular judge and we see no reason in principle for holling that where a Court generally has been defamed, proceedings for contempt of Court do not also he against the delinquent. We would therefore observe in this connection that proceedings under section 191 of the Cr P C are initiated by the representative of a Government with the previous sanction of the Governor General in Council or the local Government It is for the Government to decide whether such proceedings be instituted or not If the contention of the learned counsel for the opposite parties is sound then the High Court would be powerless to protect itself in a case where the grossist allegation against the Courts had been made but where the Government refused it might well be for purely political consideration, to canction a prosecution We are clearly of the opinion that the inherent power of the Court to nee clearly of the opinion that the inherent power of the con-punsh every contempt of Court is a power which is essential in the interest of the administration of justice and that power is not restricted in any degree by the provisions in the Cr. P. C. relating to proceedings which may be instituted with the sanction of the Government where

which may be instanced who the random or an electric the Courts or I'm Majerty's adjects had been defamed. In our opinion the law upon this matter is not in doubt. It has been selectly enunciated in a number of decisions to many of which we were a firred by the learned counsel for the opposite parties and by the learned.

croment advocate

36..

or wil

"We are therefore elevity of the opinion that neither on general principle nor in a recorded decision is there any support for the contention of the learned consist for the opin tell parties that "the Court is not empowered to pansh contempt where the alleged contempt consists of a general defamation or aspersion of the Court and not a priticular judge in regard to his conduct of a particular case. Learned consist, has been unable to cite one single relevant authority in support of his arguments nor his he been able to suggest and cogenity of the content of differentiating, between the cases of a defamation of a particular judge or a particular. Bench and the defamation of the Court generally. The distinction which he has attempted to draw is now judgment clearly alloge at and unsound.

I respectfully agree with the statement and adopt it as representing the correct view of the law. The objection taken to the jurisdiction of this Court in the present pro eedings has therefore no substance in it and in my opinion must be rejected. With regard to the merits of that case I would respectfully adopt the linguing used by Sir Norman McLeod C J Emperor e Ballrest na treent 46 Bombay 592 at page 621 and to say that the article published on March 21 was calculated to excite in the minds of the people not only the ampression that a croons could not get a fair trial at the hands of the Court alleged to be under the influence of executive authorities but also a general dissatisfaction with judicial determination so that the danger was created that the scoole's alleg ance to the laws might be fundamentally shaken and a most dingerous obstruction to the administration of justice created. The administration of justice within this presidency has been entrusted to us we have the fower in execution of the trust imposed upon us to provide that such dangers, when they arise shall be removed and in exercising these powers we seek not so much to protect ourselves as to protect the prople from the evil which will result if their faith in the authority and justice of our tribunals be impaired

The Rtsjondents in this case, hive made no real attempt to excuse or jettle their conduct. They have simply stud in tiffet 'this article is fur comment and we have done no wrong." In such erreumstance, I think we must inflict upon them some punishment which will bring bome to their minds the fact that in our judgment they are entirely wrong and also realisation that their action in publishing the article was in the highest.

degree improper and derlorable

reputing ornamenting finishing or otherwise adapting for use for traisport or for sale of any article or part of an article

False statement-S 171 G I P C

Palse trade description—means a trade description which is untrue in a material respect as regards the goods to which it is applied and includes every alteration of a trade description.

Ferry includes a bridge of houts pontoons or rafts awing bridge a flying bridge and a temporary bridge and the approaches to, and hinding places of a ferry

Fictitious stamp-- 263 (3) I P C

Force-5 319 I P C

Forged Document-S 470 I P C

Forgerv-Ss 463 464 expln I P C

Fraudulently-S 25 I P C Gaming-includes rain gambling

Granja-is an intoxicating drug being a preparation of the hemp

Giving false evidence-S 192 I P C

tood futh- 5 of I P C

Goods-means and includes every kind of movable property

tioonda-includes a hooligan

Government-S 19 I 1 C

Government of India-F 16 f P C

Gratification-S 161 explin I P C Grievous Hurt-S 300 I P C

fundian-means a person having the circ of the person of a minor or of his property, or of both his person and property

Habitable room-means a room constructed or adapted for human

Hackney carriage—means any wheeled vehicle, drawn by horses and used for the conveyance of passengers which is kept officed or plus for hire by the hour or day or according to distance

High Court-S 4 (1), Cr P C

House breaking-S 445, I P C House-breaking by night-S 446 I P C

House trespass-\$ 442 I P C

Hurt-9 319 1 P C

Illeral -- S 43 I P C

Hut-means any building no substantial part of which, excluding the walls up to a height of eighteen inches above the floor or floor level is constructed of masonry, steel iron or other metal

Illicit Intercourse-Sa 372 373 I P C

Impresonment—shall mean impresonment of either description as defined in the Indian Penal Code

360

Injury-S. 44, I P C Inquiry-S 4(k) Cr P C

Instrument of Gaming-shall include books or registers in which rain gambling wagers are entered all other documents containing evidence of such wag re and anything used as a means of rain gambling

Intoxic iting-Drug mouns (i) gain bhang or siddhi, charas and every

preparation of the hemp plant cannob s satisfal in every admixture of ann every intoxicating drink made from,

any article referred to in sub-clause (1 of this clause, and (iii) any other intoxiciting drink or substance which the Local

Government may specify in this behalf by notification, with every preparation or admixture of the same but does not include opium

Judge-S 19 I P C

Jud and Proceeding-5 193 explo I P C

Javenil' ofunder-means in of oder whom the Court after making such enquiry (if any) as may be diemed necessary, shall find to be under sixteen verrs of age Keeper of a Lodging House-shall mean the person to whom a license

for the reception of lo lgers in any house shall be granted

Keeper of a Sarai-includes the owner and any person having or acting in the care or management thereof

Kerosine-means any inflammable hydro carbon (including any mixture of hydro-carbon or any liquid containing hydro-carbon excluding motor spirit) which-(a) is made from petroleum and (b) is intended to be or is ordi-

namly used in liquid form for purposes of illumination

Kidn apping from British Ind. 1-S 300, I P C Kidnapping from lawful guardranship-S 361, I P C

King's coin-Every con which is declared to be legal tendered shall be deemed to b king's coin

Land-shall extend to messunges, and all other hereditaments, whether corporcal or incorporcal and to any share thereof

Land or water - 5 145 (9) Cr P C

Lawful Guardrin-S 361, expln., I. P C

Leading Question-5 111, Indian Evidence Act.

Legal proceeding-means any proceeding or inquiry in which evidence is or may be given, and includes an arbitration

License-means a license granted by a proper authority

Liquor-means intoxicating liquor, and includes spirits of wine, spirit, wine tari pachwai, beer, all liquid consisting of or containing a cohol and any substance which the Local Government may, by note, declare to be I quor

Local Government in Bengul-means the Governor of Bengal Lo. al Law-S 42, I. P. C

24

Losing wrongfully-S 23, I P C

Lundic-means an idiot or person of uncound mind Lurking House t espass-S 443. I P C

Lurking House trespiss by mitht-S 444 I P C

Magistrate—includes all persons exercising all or any of the powers of a Magistrate

Mul bag-includes a bag box parcel or any other envelope or covering in which postal articles in course of transmission by post are conveyed, whether it does or does not contain any such article

Muntenance order—means a decree o order other than order of affiliation made by a court in the exercic of civil or criminal jurisdiction for the periodical parament of sums of money towards the maintenance of the wife or other dependants of the person aguinst whom the order is made

Making a false document-S 464 I P C

Man-S 10 I P C

May presume - S 4 Indian Fyidence Act

Member of an unlawful assembly—S 149 I P C

Minor-means any person who shall not have completed the age of eighteen years and minority means the status of such person

Misappropriation of property-S 403 expln 1 I P C

Mischief-E 4% I P C

Month-S 49 I P C

Motor spirit-means any Inflammable hydro carbon (including an) mixture of hydro-carbon or any liquid containing hydro carbon) which is crabble of being used for providing reasonably efficient motive power for any form of motor vehicle

Motor vehicle—includs any vehicle carriage or other means of conveyance propelled or which may be propelled on a roud by electrical or mechanical power either entirely or partially

Movable property—8 2° I P C

Murder-9 300 1 P C

Non bailable offence-S 4 Cr P C

Non cognisable case—S 4 Cr P C

Non cognisable offence—S 4 Cr P C Not proved—S 3 Indian Fydence Act

Off nce-S 4 I P C

Off nce-8 4 1 P

Officer of police-includes village-watchmen

Omission-S 33 I P C Open court-S 33 Cr P C

Open court—S. 313 Cr P

Opium—includes also poppy her ls preparations or a limixtures of opium an lintoxicating drugs prepared from the popty Oral endence—S 191 Indian Fivilence Act.

Ordinary powers-\$ 36, Cr P C

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371 APPENDIN

Pachwai-means fermented rice millet or other grain, whether mixed with any liquid or not, and any hour i obtained therefrom, whether diluted or undilated, but does not include beer Person-5 11 I P C

Place-S 4 (q) Cr P C Pleader - 5 4 to Cr P C

Police -includes all persons who shall be enrolled in the police force by the Lo al Government

Police o'ficer-means an officer in charge of the police station a police officer making an investigation under chapter XIV of Cr P C or any other police o heer not below the rank of Bub inspector

Police station -S 4 (s Cr P C

Possession - S 27 I P C

Proclaimed offunder-5 41(2) (ii) Cr P C

Property mark~S 479 I P C

Prostitut on-S 373 expla 1 I P C Proved -S 3 In lian Lydence Act

Public-S 2 I P C

Public document-S 74 In han Evi lence Act

Public Holi lay-includes Sundays New years day Christmas day if either of such days falls on a Sun lay the next following Monday Good Friday and any other day declared by the Local Government by notinea

tion in the official (razette to be a public holiday Public \usunce-5 268 I P C

Public Prosecutor-S 4 (t) Cr P C

Public servant~\$ 21 I P C

Rabe~S 37, I P C

Reason to believe-S º6 I P C Re examination-8 137 Indian Evidence Act.

Relevant-S 3 Indian Evidence Act Rioting-S 146 I P C

Robbery-S 390 I P C

Secondary Evidence-5 63 Indian Evidence Act

Sessions Division-S 7 Cr P C

Shall Presume-S 4 Indran I vidence Act

Special Law-S 41 I I (

Special Magistrate-S 14 Cr P C

Stolen 1 rojerty-8 110 J I C.

Sub divis on-5 4 (1) Cr 1 C

Subdivisional magnetrate-e 13 Cr P C Subordinate magistrate-5 o, Cr P C

Summons Casc-8 4 (b) Cr P C

Theft-S 2-S I P C

Thug-S 310 I P C

Trude Mark—S 478, I P C
U due influence—S 171 C, I P C
Undue influence—S 171 C, I P C
Using a false property mark—S 480 I P C
Using a false trude mark S 480 I P C
Valuable security—S 80, I P C
Voluntenly—S 9 I P C
Voluntenly—S 9 I P C
Voluntenly—S 9 I P C
Voluntenly—S 9 I P C
Voluntenly—S 9 I P C
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Voluntenly—S 9 I P C
Voluntenly—S 9 I P C
Voluntenly—S 9 I P C
Voluntenly—S 9 I P C
Voluntenly—S 9 I P C

Woman—S 40 1 P C Wro | ful cot finement—S 340 1 P C Wron, ful gun—S 23 1 P C

Wrongful Loss—S 23 I P C Wrongful Loss—S 23 I P C Wrongful restraint—S 333 I P C

VERNACULAR WORDS.

| deultivated shire s incerent altivities of a yearly agreement if the crop to his lan flord to a continue interest. I trees not useful as timber a feamer at (Diaca) altry boundary line of any plot ras sid boundary math between |
|--|
| |
| grant of land al signs used in maps able grant of land alsigns used in maps able grant of discrepant ly the according to respective atout to on tor lands main land ent timporary tody that ripens in Bhadra ler of a tenancy (Jafpanguri). exchange |
| |

ì

| Vernacular | English |
|---------------------------------------|--|
| Ba hal | Confirmed |
| Ba h th | Revenue-free, confirmed not resumed |
| Bud | Low lands running like channels through jungly areas and cultivated (Dacca and Mymensingh) |
| Baidyottar | Lands granted rent free to physician or Budya family |
| Baishnavottar | A kind of rent free tenure. |
| Bakıva | Arrears |
| B. lu | Sand |
| Ba nam | In the name of belonging to |
| Bandhakdata | Mortgagor |
| Ba dhakgrihita | Mortgagee |
| Bandhal sutra | By virtue of mortgage |
| Bandh | Lmbankment general) Water Reservoir |
| Bandobast | Settlement |
| Bankar | Pent for gathering wood etc |
| Bantak sutra | By virtue of partition |
| B_or | Low lands running like channels through jungly areas and cultivated. |
| Barat | Cross reference |
| Bar burdarı | Travelling charges (an abwab) |
| Barga | Produce paving tenancy |
| Barga daga | Equare-plot surveying |
| Bara | Homestrad |
| Basat | ין |
| L-stu | Homestead land |
| Barsha | Low land rice, also land suitable for such rice. |
| Risat praji | Homestea I tenant, |
| Bata dag | I plot with a fractional number |
| Batar | Same as al. (Cacca). |
| B_til | l Vod |
| Batwāra | Partition |
| E v3 | Seller or vendor |
| B.zv fti | I esumed |
| T av fti nishkar | Pesumed rent free |
| Pazv fti jogva nishkar Beani dakhl | Pent free (resumable) |
| ani daghi | Unlawful possess on |

| Vernacular | Fnglish |
|-------------------------------|---|
| ima, be-nami | Forced labour a service tenureholder who renders menial service (Mymensingh) Transaction in the name of another The person in whose name such a transaction is male |
| jal ithil | Out of serial order |
| abita. | Informal not certific i |
| h | , |
| 1-21/g | Produce rent |
| Bhagehāsı | Cultivator of a Bh g tenancy |
| Bhadai | \utumn crops |
| Bhagottar Bhag khazana | A rent free tenure |
| Dung Engrans | I sterally rent in kind but in Rajshahi it minns a tenancy where the rent is a quar- |
| | ter of the produce plus a money rent |
| Bharat Samr it | ter of the produce plus a money read |
| Sri fer Blurateswar | Fmperor of India |
| Parkar Bahadur | g · |
| Bhatan | Service tenure of a ministerial employee |
| Lhita | (Rajshahi) |
| Bhiti | High land |
| Bhuta | Paised land Cash advance given to an Adhiar (Jalpan |
| | guri) |
| B bala | 1 isr uted |
| Bib dha swatwa | Miscellaneous rights |
| Bichan ka bā (Paishahi) | 1 |
| Bichia jala | , Secd bed |
| P sraha | ldol |
| I ikray B kreta | \ \ale \ \ \cappandor |
| Bil | Marsh |
| B! gashtı Chakarın | A service tenure held on condition of per- |
| ijaan Charat iji | datan disa betwannes tor, as weak a mich. |
| | and ward as distinct from rangasti |
| 7 | chakaran (Midnapore) |
| Li esh anushanga B st. rit | >pecial incidents (of a tenancy) |
| B tang | } In detail |
| |) an accan |
| | |

Вото

B' number

Brahmottar

Dukht

Dakhlkar

Brata bhiksha

Vernacular

A kind of pail ly

Rent-free tenure

English

Number in Collector's general register of revenue free properties called Register B"

A kin l of 'rent free tenure (Bakargangi)

minor crops at intervals and having no

Occupant also possessor of an interest.

arls (Mr Inapore)

In the pose ssion of

| Dige t DRIEDITA | A will for tent ties religits (Dawn Prop) |
|----------------------|--|
| Beith | A rent free grant |
| Bujh irat | Local explanation |
| Chah tram | Fourth class used in classifying lands in |
| | un lulating country |
| Chak | A plot in the Th kbust map |
| Ch karan | A service tenure |
| Ch 1: | Cultivated high land (banks of a tank) |
| Ch inda | Dixed survey station |
| Chandina | The holling of a shopkeeper |
| Char | Alluvial lan l |
| Charu | Right of grazing |
| Charch | 1 revision of the rent demand interme- |
| | dirte between two regular settlements |
| Ch si praja | Cultivator |
| Chat in | High fallow land |
| Chauha l li | Boundary |
| Chhan bari | Short thatching grass (Jalpaiguri) |
| Chhapi | Concealed |
| Chhara bara | Deserte I homestend site |
| Chhirti | Aban lonment (of bol lings) |
| Chhit ar ızı | i block of a mauza separated from the |
| Chir [†] gi | A kind of rent free land |
| Chirosth iyi | Herital le an I not hel I for a I mite I period. |
| Ch tha | Paper showing measurement of fel !s |
| Chukanidar | Pent paying tenant below a jotedir (Jalrai |
| Dag | guri) A fiel i plat |
| Dimi | lermanent |
| Diar | Path |
| Pihi | Lauls formed out of old fallows vielling |
| • | THE 142 TOTALISE OUT OF OF OH LANDON AND THE |

| Vernacular, | English |
|-----------------------------|--|
| Pakhh swatwa bisishta | Possessing rights of orcupancy |
| Dakhh sawina sunya, bihin | Not possessing rights of occupancy |
| Lakhila | Rent recent |
| Dakhil khārij | Mutation |
| I an bikray kehamata prapta | Transferable |
| Fån bikray kshamstå rabit | Not transferable |
| Dang | Abbreviation of 'darun' which means on |
| | account of or 'dikhl' which means 'in |
| | po-sussion of" |
| | Tanks excavated in a bil for preserving |
| D-ng1 | fish (Dree) |
| - | 111_h arable land |
| Dan sutra | By virtue of gift |
| Dar | Subordinate |
| D47.3 | Water channel (Western and Northern |
| | Benzal) |
| Darwast | Entire |
| Das-8.4.4 | Decenn d (settlement) |
| Lav sudi, (khai Lhalisi) | Usufructuary mort_age |
| Dtbottar | Dedic sted to God |
| Degar, Lagar, Dahar | Cow path (Mulnapore) |
| negr char | build bank submerged at ordinary high tide |
| Dihat hissa | Share in a manza or kismat (Mymensingh) |
| Dendar | Judement debto" |
| Dhkı | Produce-passing tenancy (Daces) |
| Dhela | Uncultivated sloping land (Midnapore) |
| Dhani | flice land |
| Dhanya kar ri | Pro luce paying tenency |
| Dhol shuhrat | Pro Limition by best of drums |
| Dhulat krishi (Rabi) | Crois that are gathered in Falgoon and |
| Dista | Chutra |
| Disra mahal (taluk) | Alluvial formations |
| | I state formed by resumption of alluvial |
| Dighali | A kind of tenure with fixed rent (Mymen- |
| | A kind of tenure with fixed tent (Stymon |
| Ding | An abbreviation for 'Digar', means and |
| | |

others"

Second qual ty (land)

Regulatio : If of 1819

Poem

Doens I man

Hakiat

| Vernacular | English |
|-------------------|--|
| Dofaslı | Twice cropped |
| Dahala | Low arable land (Jalpanguri) |
| Daul | Statement of rent or revenue |
| Ek fasil | Once cropped |
| Ekun | Total |
| Ekwal | Amalgamated statement |
| Elika | Jurisdiction |
| Ewaz sutra | By virtue of exchange by exchange. |
| Fard | List |
| Fasi | Crop |
| Fasl mukhi | Yearly assessment of rent on the part of a |
| | holding which bears crops (Midnapore) |
| Faut Firar | Dead and absconding |
| Fauti | Intest its property (see above) |
| Tazil | Fxcess |
| Piran | Abandoned relinquished |
| Fihrist | Index |
| Gair mukarrari | Rate of rent not fixed |
| Gar | Average ditch |
| Gar bandobasti | Unsettled |
| Gurla k patit | Unculturable fallow |
| Gati | 1 tenure in Faridpur, Jessore and Khulna |
| Giri (Jalpaiguri) | The person under whom an adhiar (q v) |
| | hol is lau is |
| Girwi | Mortgage (Mymensingh) |
| Gochar or gobăm | Pasture land |
| Gumashta | Agent |
| Copath | Cattle track |
| Goshwara | An abstract of the rights, areas and rents |
| | shown in records |
| Gram kharehā | An abwab expenses of the zamindars |
| | mulassal staff totalled and assessed on |
| i | the raisats at so much per rupee of |
| Guni | rei t. |
| Gunit Guz rat | Offset scale |
| Haimantik | Through |
| Hajat jama | Winter |
| Hak | Rent in abeyance. |
| Hokat | Right |

Tenure

Paglish

Vernacular

| | -, |
|--------------------|---|
| HAI | Present, recent, the commonest measure |
| | of land (Jalpaiguri) |
| Hälat | Path (village highway, broader than a |
| | 1 ath) (Last Bengal) |
| Hali bichra | beed hed |
| Haola (pr Han Ha) | A charge |
| Har mukarrara | Blate of rent fixed in perpetuity (Midna- |
| ···- | 100c) |
| Har rakm | Rent which is neither cash nor produce |
| | (Mulnapore) |
| Had | Cultivated lands |
| Hásil zamin | Land under cultivation |
| Hib'yat | Relating to a Lift |
| Hiban ma | Deed of gift |
| Head prithale | Segurate account |
| litent | 5hare |
| Haruri raisat | One who pays rent direct to landlord's |
| • • | main cutchery instead of to local tehal |
| | dir or mindal |
| Ipira | Larming lease |
| Ijmāli | Joint undivided |
| Izi | Continuation |
| Iz*fa | lucrease additional rent |
| Intifa_ | Furrender |
| Jandi (pr plraudi) | Usufructuary mortgage |
| Jazira (char) | Island thrown up in navigable river |
| Jal | Rice land (Midnapore) |
| Jali | Marshy land water channel |
| Jali bhiti Jan | High land where paddy scedlings are grown |
| ant | A kind of paddy grown on fleoded fields |
| Jalkar | (Mymensu kh) |
| Jal acchan | I ishery right or rent |
| Jama | Irrigation |
| Jamābandı | Rent |
| Jami mif | Rent-roll |
| | Non rent paying, generally according to |
| Jam'ir logya | Iceal custom (Midnaj ore) |
| Jami ii | Liable to 1 ayment of rent |
| 1.7 | Canal or channel for irrigation purposes |
| | and k tding out of a river (Jalpaigure) |

| Vernacular | English |
|-------------------------|---|
| Jan | A narrow water passage (Mymensingh) |
| Janch | Check of the record |
| Jarip | Survey chain |
| Jautuk | Rent free grant at the time of marrage (Dacca) |
| Jinswar | Crop statement |
| Yot | A form of tenancy |
| Kabuliyat | Co interpart of lease |
| K imi mukarrari | Permanent tenancy at fixed rent |
| K t m1 | Permanent In Bakari unj and Fandpur this connotes permanence of rent as oppo- sel to chirasthayi q v which refers to the duration of the tenancy |
| Kdı | Cultivated uplands (not classed as dabi) (Mi inclore) |
| Kamı | Shortage |
| k inda | High land (Mymensingh) |
| Kanta | Dividers |
| Karshi | A cultivating holding |
| Kararı | Lixed used also in regard to land which has not been diluviated |
| Kat kab da | Mortage con lition il sale |
| Khair t | A kind of rent free |
| Kl a khalasi | Usufructuary mort_age |
| Khatili | Threshing floor |
| Khar ¹ na | Rent |
| Khartin idin pradin mu | Lent not being collected |
| Khara a brit thir jogya | Rent hable to only incement |
| Khaz cia dh'irjya n'ii | Rent is not settled |
| Kharinar 10gy 2 | I rible to 1 13 ment of rent |
| Kh ur u | Linds in immediate possession of land |
| Khis khimir | (Threshing floor Cown cultivation of a landlord |
| Khampuri . | I reliminary record writing |
| Khan li khand | I urchased port on |
| Kh ma i khudi | Mosque , literally House of God. |
| Khanit jatit | literally excevations and waste," un |
| Kharid sutre | By virtue of purchase |

381

| Vernacular | I nglish |
|---------------|---|
| Khanja Khs | Separated independent taluk Ones own, private, also the property of Government (cg., khas mabal Govern- |
| Khasra | ment estate) Dreft (in rough) field statement |

Khata Abbreviation of Lbatian Kh tak Delitor Kinten

Record of rights Khet $\Gamma_{tr} 11$ Abet bant Li 11 by field

Lhewat The khatran of a proprietor or tenurchol ler Khu I Perso cally , homestead land Raishahi)

brad Small khush dakhl

Permissive possession (Mymensingh) Killabandı See ' Parge lagi K_{ISm} Description kind

K emat Vill Le List Instalment of rent or revenue Listibandi Paymer t by instalments

Kistnar Ca lastral survey Lita nlat

separated from the main channel

Kol an arm of a river either connected with or Kol raryat Under rawat Ditto

Vendee

Korfa raiyat Kreta Lik patit Culturable fallow Measuring rol

Lagga L khiral Lan is held revenue free L.khir plur Revenue-free proprietor

Lapta paiwasti Accretion Meas iring rod

Lath , nal Total (amount or sum of

Mablag

Tenure (lit rall) int rmediate right 7 Madhya swatwa Tenurehol ler

Vi lhyaswatwadbik ri

Land given for a reli, ous purpose, a kind Mah. trun

of rent free granted to a non Brahmin Remission (M Inar ore) T tite

Mahakup (pr Mahukuf) Mahal Mai 'cess' Inclu ling cess

ba ir jamā

| Vernacular | Englsh |
|--------------------|--|
| F in hara | Betel garden |
| Panchuki | Quit rent fixed in perpotuity (Midnapore) |
| Pirispir ansi | Proportionate share individual share of |
| I treha | Copy of preliminary khatian given a outherst |
| 1 trim to | Area |
| Parkh u | Incomplete rent receipt |
| J ut.1 | Check line check |
| Pat t | Waste land |
| Patitib d | Reclaimed land |
| P ⁵ tri | A flat ruler |
| latti | Leise. |
| Pattan | Settlement lease. |
| Ping | Abbrevest on for pasar a son of |
| lirpu | Fide ment in the name of a Muha |
| Proje | Tenant a produce paying tenant (Jalpan |
| Praj bili | Hell by tenants |
| 1 rath 1 | Custom |
| Puritan patit | Old fullow |
| I abı | Epni g crops |
| Raikhik chitra | Tennre tree |
| Rijasna | Revenue |
| Rakm | Class, |
| Pakba | Area |
| Rasa liya | Proportionate. |
| Ras d | Rent receipt. |
| Rihai | Fxemption |
| Rihan | Mortgage |
| I m uz | Custom |
| Ruk | Incomplete rent receipt |
| Pozn Imeha | Diary |
| Ruh k. r. Pubak≉rı | Written proceedings |
| Pup, Ropa Ropan | Transplanted |
| F 1 1k | ort |
| Ribik hal | Index of old and new khatian numbers |

(I set Bengal)

Revenue

English.

Vernacular

| Salharaner by abalianya | Used by the public |
|-------------------------|--|
| Saham | Share, allotment in partition) |
| Eahar: | Medium arable land (Jalpaiguri) |
| Sahi muhr | Scaled and signed (certified) |
| fakin | Pesident of |
| Ealama | |
| | Premium for recognizing a transfer, |
| Ealı | 1 |
| 6.hana | Rice land (West Bengal) |
| Chamil jama | Peccipt, yearly |
| Sanad | Joint rent |
| Sanayat patit | 1 deed of grant. |
| Sana | Ol I fallow |
| San katarı | Produce rent |
| and madail | 1 Lin 1 of settlement for a season s crop |
| Sarasarı | (Rajshahi) |
| Earu jama | An ordinary raiyati holding (Rajshahi) |
| Eashmahi | Q nt rent (Pashahi) |
| Sebait | Fix monthly (rent) |
| coatt | Priest who arranges for the worship of a |
| Farba mot | dicty and manages the endowmont |
| Sharik | Grand total |
| Shikastı | Co partner Injustited |
| Shikasti paiwasti | R formation |
| Sibottar | I ent free tenure Brahmottar |
| E al | trrange in due order |
| Sikal | |
| Shikami (Phikmi) | Chain Subor linate Auxiliary shikimi line is the |
| small (Filkmi) | survey line from which offsets to field |
| | boundaries are taken |
| S kamı Tıluk | \ aubordinate Taluk or Tenure |
| Sim ina | Boun lary |
| Smartklipi | Ant is memorandum on the first page of |
| | khasra volume for orders on doubtful |
| ļ | po nts |
| €oim 1 | Thirl class Used in classifying lands in |
| 1 | un iulating country |
| Sreni [| "t tus (Midnipore) |
| Ethit | \sects |
| - ' | |

Vernacular

Suchipatra (dager)

Sud bandhak

1 hehhed

Index (plot)

Usufructuary mortgage

I aghsh

| Sun | Uplands (West Bengal) |
|---------------------|---|
| Swasthal pain isti | Peformation in vitu |
| Swatura | Interest in land tenancy |
| Swatw idhikari | Owner of the interest |
| Taf il | Table list |
| Tagabi (pr. takiwi) | A kind of mortgage where the mortgagee pars half the produce of the land to the mortgager but when the principal is paid the land goes back to the mortgager |
| Tahsil | Collection |
| Tard td | Statement filed under I egulations XIX and NAVVII of 1703 and VIII of 1800 cluming Lakhiraj (Bilshahi or non Bilshahi) title |
| Talibina | Process fee |
| Talab bakı | Secount of demands and arrests |
| Talika | List |
| Taluk | Lit a subordinate' interest a tenure, in Jalpaiguri a territorial unit corres ponding to the Revenue Survey mauzs of other distinct |
| Timil . | Carrying out of an order |
| Tun . | High Ind (Mamensin_h) |
| Tanka . | Pro luce trent |
| lankhi | Survey of excess Inn I (Pajshahi) |
| Taref | Portion of an estate e g., bara taraf chots |
| Tarmim | Correction |
| Tartib | Arrangement of record |
| Taedik | \tte=tation |
| Tek | High fallow land (Di ci) |
| Tengar | Hillock |
| Thana 'number' | Serial number of a silling in a thana |
| Thika barga | se drib |
| Thik i mularrari | Pens fixed in perjetuits for a link' of lin like out without mea aremer' (Milospore) |
| | 1 |

Freetment

337

| Vernacular | ł nglish |
|--------------------|--|
| Udbastu | Lands adjoining homesterds and locally |
| Uparistha (swatwa) | Superior (or landlord d interest) |
| Utsarga | \ rer t free grant |
| låd d.sht | Memorandum |
| Zibita | Authenticated certified |
| Zamindar | Proprietor |
| Zaupa 1 | Wife of |
| ler | Continuation |
| Zimma | In the custody of |
| Zirast | Proprietor s private lan is |

Latin words and Phrases.

Ab entire-From the beginning Alias-Otherwise Amieus Carlas-Friend of the Court, who informs the Court when doubtful or mistaken of any fact or decided case Animus-An intent, animo, with an intent

Capar dots—Capable of committing crime Compos mentis—Of a sound mind Caria adeisars rull—A deliberation which a Court sometimes takes where there is any point of difficulty before it gives judgment in a cise

De die in diem-From day to day De facto-In fact opposite to de jure, of right De jure-By right De minimus non eural lex-The law cares not about trifles De noiso-Afresh Dies non-A day on which Judges do not sit Doli incapox-Incarable of committing crime

Encenti.—With child Ln masse—In a boly En route—On the way Ln state—In company I'm cathedra—With the weight of one in authority Lz Cara—Out of Court Exempli gratus—For the purpos of example Ex necessitie letis—Trom the necessity of law Ex office—Officially, by rittee of office Exparte—I proceeding by one party in the absence of the other Expost facto (jure)—From a law mule after the thing prohibited was done Fxtra rices—Browd powers

Feme — A woman | Teme court — A martied woman | Feme sole — An unmarried woman | Texcide — Criminal abort on | Textis — A babe in the womb | Ferum — 1 Court the Court to the jurishiction of which a party is liable | Forum competens — The Court hiving jurishiction over the matter | Forum wincompetens — A Court not having such juris letton

Grata declum:—A soluntary statement. How elde per intertuniam—By musfortune, where a man doing a lawful act wit sout any intention of hurt unfortunately kills another. Homeode se def indendo—Where a mai kills another upon a su blen affects merely in his own defence, or in defence of his relations and not from any vandatus mot ve

Ignorantia facti ercusal Ignorantia Juris ron excusal—Ignorance of the firetectuses 3,000 rine, of the law excuses not. In-npax doit—See Doit incepax In creases—Tom beginning to ent at full lingth. In externis—At the last gisp, at the point of dath. Infra—Balon. In theo parentis. In the place of up tent. In the notice of up tent in the notice of the post—In a state of possibility. See In see—In the native of In situ quo—In the condition in which it was, in the firmer state. Inter all upons of the ting is later se—Anongst other thing is later se—Anongst themselves. In tota—Alogether, entirely Ipse dixit—He himself such a bare assection rising on the authority of an individual, do, mattern. Ipso fact—By the very is used.

Kleptomania-Invanity in the form of an irresistible propensity to sien!

LEX_LAW Lex postato—1 thing contrary to lim. Lex fort—The law of the place of action. Lex lost—The law of the place of which Loss positionite with place of which Loss positionite with place of which Loss standa—The place governs the act, that is the act is governed by the law of the place where it is done. Losus standa—The right of the place where it is done. Losus standa—The right of the place where it is done before any tribinal

Mala in se—Acta which are wrong in themselves whether prohibited by fuman laws or not as distinguished from mala prohibit as Mustler and pringry Vala prohibida. Wrongs which are prohibited by human law, but are not necessarily mala in se, or wrongs in themselves, as in playing at unlawful games & Modus operandi—Minner of operation Medical mulandia—With necessity changes in points of detail

Nemo debet bis point pro uno delicto—No one ought to be punished twice for the same offines. Aemo delect bis sexus pro una et cadem causa. No man ought to be twice pay to trouble for one and the same cuts. Aemo facilities and the same cuts. Aemo fravenentur maints—No one is presumed to be but. Nephresulta. Nothing further, the uttermost point Nolle present—To be unwilling to prosecute. Non comparaments. Not of sound mind. Aon entipa nimers sit rea—There is no guilt unless there be a guilty intent on Non feasance—The offence of omission. North Aone—produced critimal

Obter delaw—An opinion of a Judge not necessary to the judgment gren on record, in contra listinction to a judge not necessary to the judgment and the judgment. The latter is of such greater authority than the former, because delivered upon deliberation, while an extra judicial opiniou is no more than the saving of him who gives a grater diction.

For passu—by the same gradation equally, without preference Percentra—Contraryates Percentram. By the Court Per neuran—through Wand of eare Per infrintame—By mis hance Post diem—After the day Post mortem—After death as a post morten examination of a corpus by a surgicion in order to discourt the cause of dieth Perunam mobile—The Source of motion Pro forms—As a matter of form Pro tempore—For the time burn.

Qua-In the character of -

Res geste - The things done and words spoken in the course of a tran extion. The phrase is commonly used in connection with evidence and the admissibility in evidence of words spoken.

Semble Littl seems, us d in reports to show that a point is not deer ded directly but may be inferred from the direction. Super ofermable as the asset of seminary seems and in order. Super definition in the seminary seminary seminary is not as a seminary

kind Suo motu—Of one s own motion Supra—Above This word occur ring by itself in a book refers the reader to a previous part of the book like ante as opposed to infra

Ultra vires - Beyond power

Venue—The place whence the jury are to come for trial of causes, juris diction Venua quastio—in undetermined point Vis—Any kind of force or violence to person or property 1 is major—Inevitable accident, its sixth of the cause

MISCELLANEOUS FORMS

Application of Ball

In the Court of the Magistrate of Sealdah

In the matter of the application for buil and

In the matter of Emperor

Versus

Kana Thakur and others \text{\censed}

Sees 400 and 401 I P C

The humble petition on behalf of the

Most Respectfully Sheweth -

I That your pertioner was arrested on the oth of August, 1933 by Inspector Hem Chandra Lahiri and he is still kept in custo ly inspite of repeate loral prayers made on his behalf for enlarging him on bail

2 That at the time of your petitioner's arrest in thorough search of the house in which your petitioner resided was made by the said Inspector Hem Chandra I ahiri but nothing suspicious or incriminating was found.

3 That your petitioner is a family man leaving his wife and mother and that they all along lived with a respect tible relation of theirs and that your putitioner has got no previous conviction

I That your petitioner is a motor incolving and a driver and holds good certificates of character from various Puropean and Indian gentlemen whom your petitioner has served for ten years and who have all been satisfied with the discharge of his duties

5 That your pititioner is now in custo by

6 That your patitioner is in very weak state of health in the lake up and he three fell in a swoon without having anybody to look after him and after this an application was made to the police for bail but the same was refused.

7 That your petitioner is ready and willing to furnish substantial

Your patitioner therefore prays that he may be enlarged on but

At I your petitioner as in duty bound, shall ever pray

APPENDIX Application for maintenance

Case No. Mrs. 1,01 of 1925 Soc. D. Town

In the Court of the Addl Chief Press Magistrate N D Calcutta-Zamala Khatum vs. Sk. Sobraty

An application under section 485 (r P Code

The humble petition of Zamala Khatum above named most respectfully sheweth -That your humble petitioner is the legally married wife of the defendant who carns more than 40 Rs per month. That since after marriage the defendant fixed within your honours jurisdiction and used to molest and as ault your humble petitioner after being drunk. That at last the defendant had driven in it your humble patitioner about six months ago and since then has refused to maintain his wife though he has sufficient means to maintain her. Besi les the defendant molests, the com-I lamant whenever they met and that defend int being a man of loose character follows and chasti es his wife where she go s and takes sliciter Under the circumstances your humble petitioner prays for notice upon the defendant to show cause why he should not muntum his nife Com plunant's marks \ Culcutta Fdf- 1 leader _1 8 25

Application for revision before a Sessions Judge In the Court of the Sessions Judge of Darjechng

In the matter of an application for revision

The humble petition of Lachm in Dass Puranchand of Buman Bustee Darweling

Most respectfully Sheweth

I That the politioners are a firm of merchants carrying on business in Darjeding bikkim Tibet carryin, on military contract works and have house property of their own

2 That the petitioners are the owners of holling to J Bim in Bustee near Dargeeling Bazar which consists of seven blocks and which stands in the Zamindary of Burdwan R il covering it poles and these buildings were in existence from long before the Divjecting Municipal Act, 1900. came into operation

3 That the Darreeling Municipality requisitioned the petitioner on 17 1 192, to carry out certain works of improvement to the and holding No 5 which the jetitioners took up in right eirnest but the requisition also consisted in the demolition of all the latrines and the kitchen and bath room and the i ray of the block to III and the Municipality insisted on carrying them out it once and refused their prayer for time

4 That the Municipality turned a deaf ear to all their entreaties even in face of the fact that there is no pull he latrine within convenint dist of the house and started a case at un t them

6 That Mr N Sen M I I holling special powers delegated by .

Deputy Commissioner, Darjeeling U/S 6 (8) of Act III of 1884 has been pleased to order on 2 2, 27, that the holding is prohibited for the purposes of human habitation with effect from 14 2 27 U/S 244 X of the Bengal Municipal Act as amended in its application to Darjeeling by Act 1 of 1900

7 Being aggreed by the aforesaid order, the petitioners begleive to move Your Honour on the following amongst other grounds:

Grounds -

- (a) For that the learned Magistrate has erred in law in taking for granted that section 244 X of the Bengul Municipal Act as applied to Darqeling is applicable to buildings in existence before the section came into operation on the 5th March 1900 having got retrospective effect.
- (b) For that the learned Magestate did not give due consideration to the general principle of Fquity as Ind down in the several ruling that a restrospective operation is not to be given to a statute lest it may impurcusting rights and obligations.

Your petitioners therefore pray that your honour may be pleased to call for the records of the case and to issue a little on the Deputy Commissioner of Darpeting to show cause why the matter should not be reported to the Hon ble High Court under S 433 Cr P C for the quashing of convenience.

And your petitioners as in duty bound shall ever pray.

Applications for revision before the District Magistrate

In the court of the District Magistrate of Khulna

Petition for reference to the Hon'ble High Court under section 438 Cr P C

The humble petition of Nepal Chandra Basii son of Beni Vidhab Basii of village Ahainagore P & Bagerhat, District Khulna Most Respectfully Sheweth —

That your honours humble petitioner purchased some lands from Mathira Nath Essu in an auction salt and from the time of the purchas? your petitioner has been possessing the same at first by settling it with tenants and lately in this possession

That in the recent settlement proceedings which have been finally published your petitioner has been recorded to be in khas possession of the lands which bear the plot number 119 in Parcha

That the accused being baffle I in their endeavour to take settlement of the lan Is from your petitioner had at last taken the lan Into true own hands and on the 20th of May 1-st accused Narender, Nath Glose along with some other people trespassed on your petitioner's land and began to great a little therein.

That your petitioner tried to oppose them but was driven away with threats of volume

That therefore your bonour's petitioner lodged a complaint before the S D O of Engethat who summoned the accused after an enquiry by the president of the local panchavet who reported the o carrence to be true and found possession of the land with your petitio ier

That the case was thereafter made over to the file of the Sub Deputy Magistrate Mr. M. N. Chowdhurv who after examining the wite esses have been pleased to acquire the accused by his Tudgment ditted 4,9.25.

That being agreeved by the suil order of acquittal your honour's relitioner begs to file this petition before your Honour and prays that your Honour will be pleased to call for the records of the case under see 430 Cr P C and on persising the same send up the records to the Honble High Court under section 438 Cr P C with a recommendation that the order of acquittal be sit aside on the following amongst other grounds—

- (i) For that the learned Mug strate dil not write out the Judgment according to the provisions lail down in Sec. 357 Cr. P. Cole
- (a) For that the learned Magnetrate has not at all mentioned anything about the finally published pareba which according to law ruses a very strong presumption of poses on (iii) For that the learned Wagnetrate was wrong in stating that because
- no dakhili has been produced by the complainant with regar I to the land to prove his settlement with tenants it is conclusive that your petitioner has no jossession (iv) I for that the learned Migistrate has wrong in helling that because
- the accused is a co sharer of the previous owner of the land with regard to the properties he must have been in possession of the d sputed land.

 Noir honours, neutioner therefore, prays that your honour will be

pleased to mak the recommendation as praced above
And for this your honours petitioner as in duty bound shall ever pray

Petition of appeal before Sessions Judge

In the Court of the Sessions Julize at Dayceling
In the matter of a petition of appeal and in the matter of
Surbabadur Lama Convict

Appellar t

19

Mand shadur I imbu — Complainint The humble petition of Surb the lar Lana accused and convicted under section 420 I P O the appellant in this case

Most respectfully Sheweth -

1 That the complimant in this case wanted to have a pun, approve the petitioner who as a plea least child try for a license and a

him. And it was settled that the complainant would pay Rs 50/- before and Rs. 50,- more after the transaction was complete,

- 2 That as instructed by the complainant, the petitioner wrote out the petition for the heense for the gun and fited it with the Deputy Commissioner, Darpeling for favour of granting the heense. The complainant prind Rs 50/- in instalments to the petitioner as mutually agreed upon as his requireration.
- 3 That the petition for the license was ultimately rejected by the formed Deputy Commissioner on the 7th October 1925
- 4 That the complainant thereafter wanted the petitioner to refund the said sum of Rs 20/- which be vever the petitioner declined to do as it has been paid to him by way of remuneration for his troubles

5 That the case was of purely exel nature but the learned Hooy Magn-trute was pleved to hold the puttioner eminially higher section 470 LPC which is not warranted by law and sentenced him to undergo 3 months R I and to pay fine of Rs 50/ and in default, to undergo 3 months R I in addition.

6 That the petitioner being aggreered by this conviction and santence begs to prefer this appeal to Your Honour and prays that the record of the lower court may be kindly called for and after hearing the petitioner Your Honour may be pleased to set aside the conviction and sentence on the following, amongst other grounds, and pending the decision of this award the nettingne may be hadly released on had

(rounds -

- (1) For that the case was wholly misconceived by the learned migristrate
- (2) For that the case is nothing but of purely each nature for which no criminal hability could be saidled on the petitioner
- (1) for that learned magnitude was arong in holding that the petitioner had committed an offence und τ section 170 J P C α the prosecution has wholly failed to prove an intention on the part of the petitioner to deceive the complainment at the tiest of receiving the money from him.
- (1) For that the weight of the evidence is against the prosecution
- (5) For that in course of the trial the complianant was twice x3 mined to full up gaps in the pro-equation evidence which was objected to by the petitioner but the objection was over ruled by the learned majestrato.
- (c) for that the trial of the case was in camera in the private office of the Hony Magistrate far off from the cutchery buildings and the petitioner was very much han heapped in his defence by that the sentence is at least too a rere.

Petition of appeal before the High Court. In the High Court of Judicuture at Fort William in Bengal

Criminal Appellate Jury-diction

In the matter of a petition of Appeal of Banku Behari Bose Accused Appellant,

Versus King Emperor

То

The Honble are George Claus Kankin Kt Chief Justice and his companion Justices of the sud Honble Court

The humble petition of the above-named appellant Most Respectfully Shewith -

1 That the petitioner has been in possession of a plot of land

- from the time of his father and has been enjoying and possessing the same over 25 years

 2. That the optioness without the and both and with a toward Political and State of the political and said and s
- 2 That the petitioner settled the said land with a tenant Babu Narendra Nath Ghash who exceled a hut there in the month of Justha, 1333 B S
- 3 That when the said but wis creeked by the petitioner's tenint acrominal case was instituted by one Keynd Chinndra Dose against the petitioner and his said teniant Babu Narendra Nath Ghosh under see the said of the said teniant by Mr M N (howdhury Sub Dy Magaistrate of Bacerhat in the district of Khuna
- 4 That at the time of the trial of the sud camural case the petitioners searched the look in which his father used to keep tulle-deeds and run receipts and o her important jupers and found in the box an Amaliamah dated the 26th Ipadagun 1307 and two rent receipts of 1308 of 1309 B S grunted by Vithura Nith Bose and offers in fatour of the late Bibit Indiaco Charan Bose the Fither of the petitioner and he filled them before the sud—ub 1) Ma_strate bounded between them to be true and genuine
- 5 That the sail Sab D. Magastrate after tiking evidence came to the conclusion that the complainant was not in possession of the said Property and so acquitted the avaised under Section 215 Ciminal Procedure Code.
- G That the sud Sub-Dy Magistrate did not discuss the question of title based on the sud Analouma and the rent receipts and the documents did not in any way influence the sud Sub Dy Magistrate.
- in acquitting the petitioner accused
 7. That thereafter the complainant Nepal Chandra loss, mal appletion to the District Vagatirate Khulna for referring the said channal case to the Hon'ble High Court under Section 4-5 Cr. 1

Code which the petitioner submits that no such application hesagainst an order of acquittal

8 That the learned District Magistrate did not refer the case to the Hon ble High Court as was prayed for but granted sanction under See 476 Cr P C to prosecute the petitioner for committing an off nee under See 471 I P C holding that the said Anathams and rent receipts were forged though nothing was mentioned in the application before him by the complainant to that effect and though there was no evidence showing that the petitioner knew or half reason to believe at the time of their use that they ne, forced

9 That thereafter the said District Magistrate of Khulina lolged s formal complaint on the basis of which the present prosecution was started by Mr Amulya Krishna Dutta Migistrite 1st class Bagerhat who after inquiry committed the relationer accused to the Court of Sessions Khulina

10 That the learned Sessions Judge Mr K K En tried the sull ease with the assistance of a Jury and though he was doubtful if the prosecution had succeeded in making out that the accused knew or had reason to hileve that the documents were forged he accepted the unanimous tradit of the Jury that the petitioner accused was guilty under Sections 467/111 I P C and on the 23rd day of Jury 1927 convicted and sentenced your petitioner to undergo rigorous improvement for one near

11 That being aggreed by the said conviction and sentence your petitioner begs to prefer this petition of appeal on the following amoigst other

Grounds -

- I For that the Sanction of the District Magistrale is erregular and silicial
- II I or that there being no evidence to the effect that the accused knew or had reason to believe at the time of the use that the documents were forced the conjection is bad in law.
- III I or that the learned sessions Judge misdirected the Jury when he said that the question referred to in ground No. II is a question of fact
 - the said that the quest on referred to in ground No. If is a question of fact.

 IV For that the sentence is at least too severe.

The petitioner therefore [ra]s that your Lordships may be pleased to admit the appeal and ral as your petitioner on bull pen ing the hearing of the appeal and after calling for the records and hearing your petitioner's lawyer set asside the conviction and sentence passed on the accused and to pass such further or other orders as to your Lordships may seem that and rooks.

An I your petitioner as in duty bound, shall ever I ray

Application for revision before High Court

In the High Court of Judicature at Fort William in Bengal

Criminal Revisional Jurisdiction In the matter of an application under section 439 of the Code of Commal Procedure

Ind in the matter of

- Juanoia Kanta Trivedi.
- 2 Harish Toor,
- 3 Arisinha Bagdi,
- 4 Kalı Bagdı
- Accused -Petetioners
- Versus

Purna Chandra Sinha Complainant

Of posite party

The Hon'ble Sir Nalini Ranjin Chatterice Kt

То

Acting Chief Justice and his companion Justices of the said Hon'ble Court The humble petition of the above-

named accused persons

Most Respectfully Showeth -I That some Lakhern properties belonged to one Nritvakalı Dasi and one Manjari Dasi the wife and brother's wife respectively of one

Trailokhyanath Ghose of village Rudributi in the District of Murshidibad That Road Cess of the said I akhern properties fell into arrears

140 and so a Poad Cess certificate case No --was instituted against the 1900 10

and Nritvakah Dasi and Manjari Dasi and the Lukheraj properties were sold through the Court to Babu Rayan Kanta Trivedi the father of the printioner No 1 on the 16th May 1910 and he took delivery of possession of these properties through Court on the oth November 1911

3 That on taking delivery of the prope ties the said Babu Rajani Kanta T redi was in peaceful possession of all the properties through tenants, who have been regularly paying rents to the said Rajum Babu

4 That one Netra Pal was the tenant of plot Nos 1 and 2 of the sale production 1 lot No 1 wis 5 cottis and 1 lot No 2 was a so 5 cottag. The two plots bore a name of I's 2/ On the western part of plot No 2 there are two mango trees, so the aid Netra abando sed the western half of lot Vo 2 is it wis not suitable for rearing silkworm cocoons and he was given a reduction of Re 1/ from his rent. Thus the western half of plot No 2 was in the kinas possession of Rijim Babu the father of the petitioner to I and he was possessing the land by taking the margo fruits etc all almer

- 5 That Purna Chandra Sinha, the opposite party complainant borrowed Rs 500/- from the said Rajani Kanta Trivedi by executing a handnote in his favour On Purna's faiture to pay off the debt Rajani Ribbi brought's evil suit against the said Purna in the Court of the lat Munsuff Kandi, and cot a decre for Rs 529/- with cost;
- 6 That on the prayer of the said judgment debtor Purm the Court-orderd that the decretal amount should be paid by five equal annual instalments, the first instalment was to be paid in 1 lagoon 1798 B S and the 2nd instalment was to be paid in 1 algoon 1398 B S and the 2nd instalment was to be paid in 1 algoon 1330 B S and so on The Court also ordered that the unpaid decretal amount should bear interest at 12 p c per annum
- "That at the time of the payment of the 2nd instalment the judgment debtor dut not deposit the interest along with the metalment amount so the decree holder Rajun Babu prayed for the execution of the entire decree as the judgment debtor made default in payment of interest.
- 9 That the judgment debtor the said Purna Chandra Sinha complainant preferred objection against the execution of the entire decree and the 1st Court grunted his objection Then Rajani Eabs preferred an appeal against the said order of the 1st Court and that appeal was dismissed in March 1925 and the decree holder was directed to take the decretal amount by installment.
- 9 That the complument Purns Chandra Sinha thus clated at his success at the Civil Court intended to put the decree holder into trouble by bringing false criminal case against him
- 10 That with the said intention the complianant filed a petition on 27th May 1925 before the Subdivisional Officer of Kradit, alliging that he was in possession of a piece of land (part of which is covered by the western half of plot No 2 which is in the khas possession of Raian Ribbi) on which he raised a hut for storing rice and that on the 24th of May 1923, the said Rajum Kaata Trivedi gave order to his men to pull down the hut and that they pulled down the hut and carried its materials away
- 11 That the said complying the Purna Chandra Sinha alleged that he purchased the disputed plot of 6 orbits along with another plot of 15 cettes from one Protap Chandra Boy for Its 32 only in 1307 (1895). He alleged that there was a handnote of Its 21 in favour of him executed by Protap thadra Poy and that in order to jay off the dues of the handnote Protap executed that Abbals. It further transpired that Trailokhynath Ghose the husband of Nrityakah Dan, mortgreget the said jlot along with another jlot of 15 cettes to the said Protap Chandra Rox alleging them to be his Lakheraj properties. That as a matter of fact the jlot of 6 cettas sonth its Lakheraj property, part of it was the Lakheraj of his wife.

t . brother's wife Sritsakelt Dan and Manjari Dan respectively .

and the other plot of 1) cottas was the jote land of Trulokhya and the Lakhrajdare of it were Keshub Chandra Dutt; and Saroda Sundari Dist.

- 12 The said Protap Chandra Rox brought a mortgage suit got deree and re execution of the decree soll the mortgaged properties and purchased them fumeeff in 1805. But he was never in possession of the properties.
- 13. That after the purchase of Purra Chandra Sinha from Protyp. Lakhrights the plot of 11 costs frought a sint bring T 8 No 130 of 19th against the Kind Purra Chandra Sinha for a declaration that the plot belong 51 them as Lakhrighters and that the handbote and kobala were not genuine and nare collisers.
- At That the let Court gave a decree to the plantiffs in that suit and declard look the handnotte and kobals to be got up decist there being moreovederation for them. That the appellate Court also found them to be collusted decids in 1901.
- 15 That on the complaint of Purn Chandit, Sutha mentioned in pera 10 above, the Suth Invision of Officer of Kindi summoned the pertitioners and one Hrish Kich Truch under Section 147 I.P. C. and the arcaed were tried by Mr. C. K. Evrigint Felam, Sub Deputy, Magivirate who found their guilty and convected and sentenced them to pry finish The pertitioner No. 1 was fined Its. 7) in default one months a noormal supersonment. It the pertitioner No. 2 was fined Its. 20 in default. 3 weeks 70,000 supersonment. Historia was fined Ps. 30 in default 2 weeks 70,000 in meritonic method in the pertitioners No. 3 and 4 were fined Its. 10 cock in default one works argonous impressionment.

16 That the petitioners preferred an appeal to Mr W S Addie
12se Magsirate of Murshedabad He assimited accused Urishitesh
Thesh but in respect of the other accused he did not interfere and
disanseed the appeal in respect of them on the 4th of Norember 1925

If Threater the pethoders moved this Hon ble High Court and a rule was resuel being Cy Pex No 1037 of 192), and on the Eth February 1202 a Dixis on Leoch consisting of Justice C C Choice and Mr Justice Dural made the rule absolute and directed the appeal to be reneard by the Sessions Judge of Murchid bad.

18 That theoreties Mr N L Blank the Sessions Judge of

18 That thereafter Mr 1 I, Blank the Sessions lange of Murchid that he ard the appeal and dismissed it on the Soil Jane 1920.

Your retitioners being destituded with the said court from and sentence beg to more the perition on the following imongst other Grounds

I For that the pullment of the Court of appeal below is not in

I for that the human successful to the large of the successful for that the larged Indge of arong in his in not consider.

II for that the learner image is wrong at all the alleged document of take of the complument on which the complument based has possession

III For that the learned Judge is wrong in law in not discussing the evidence as to the ro-session of the land

IV I or that the courts below ought to have held that the case was one of civil dispute

V For that the Courts below have not considered the documentary evidence on behalf of the accused persons

VI For that the courts below are wrong in holding that the judgment of the Civil Courts were not admissible in evidence

VII For that it ought to have been held that the petitioners had no unlawful common object.

Your peutoners therefore pray that your Lordships will be pleased to send for the records and issue a Rule calling upon the District Magistrate of Murshidshed and the complainant to slow cause why the convictions of and sentences praced upon your petitioners should not be set asid, or to pass such other or further orders as to your Lordships may seem fit and proper

And your petitioners, as in duty bound, shall ever pray

AFFIDAVIT

- I, Milkinta Das, son of late Nabin Chandra Dis inhabitant of Manigram, Police Station Kindi, District Murshidabal, do hereby solemnly affirm and say as follows —
- 1 That I am Expordaz of the abovenamed petitioner No I and looked after the case in the Courts below.

2 That the facts stated in the above petition are true to my knwledge. Solemnly affirmed this the day of August 10.25 before me. I certify that I read over and explained the contents to the declarrart and that the declarant.

seemed perfectly to understand them

Commissioner.

Application for Transfer under S 526 Cr P C

In the High Court of Jud cuture at Fort William in Bengal Criminal Revision 1 Turisdiction

In the matter of an application and r Section 5.6 of the Code of Criminal Procedure and in the matter of

Likolanath Chewdhury

Complainant-Petitioner

1 Satela Can lea Chosh

2 Talti Ma an Sarkar

Accused

Opposit -- Partics.

The Hon'l le Sir Lancelot Sanderson Kt., K C,
Chief Justice and his Cimpanion Justices

of the said Hondle Court

The humble petition of the Complainant above named

Percectfully sheweth -

- That your petitioner is the Secretary of the Singty Kayistha Samaj and as such filed a petition of complaint on 21 S 21 in the Court of the Sab Divisional Officer of Unberry charging the sid accused under Sees 406 and 420 I P C in respect of the money belonging to the said Samaj
- 2. That on the day the partition of complaint was field the learned bub Din 10 all Officer made an observation in open Court that the case was the result of a party feeling suit to be in existence between the parties and thus imported his own personal knowledge into the matter and formed an opinion with regard to the case at the very circlest stage thereof
- 3 That on the same dry the learned Sub Divisional Officer allowed Babu Haripida Bhatticharjee Vulters to make submission on behalf of the accused persons although this was objected to by Rubu Khagendra Yath Ganguli Ayahi appearing for the complainant
- A That on the same day the learned Sub Divisional Officer refused

 I That on the same day the learned Sub Divisional Officer refused
 to look into some documents which are to be used as evidence in the
 care a anot the accused persons after they were tendered by the
 complainants as all Valid
- 5 That on the 21st day of August 1924 the learned Sub Divisional Officer passed the following order —

Let the complainant prove his case on 3 9 24 '

Thereafter your petitioner applied for subprenas for the attendance of his witnesses and his application was rejected although his pleader undertook on the petitioner's behalf to pay all expenses to the witnesses

as will be ordered by the Court on the next day of heiring

6 That the learned Sub Divisional Officer's order calling upon the petitioner to deposit Rs 100 as truelling allow unces for Prosecution wit petitioner to deposit Rs 100 as truelling allow unces for Prosecution wit researched the petitioner late on 36th tugget 1924 and jour petitioner on lat Seytember 1921 appeared in Court and deposited a cheque for on lat Seytember 1921 appeared in Court and deposited a cheque for money in 1924 high as he had not time to exch and deposit the Ps 100—on the Lloyded Bank as he had not time to exch and deposit the insign in 1924 in 1924 to 1924 the period Sub Divisional Officer silence him saying keep matter the learned Sub Divisional Officer silence him saying keep matter the learned Sub Divisional Officer silence him saying keep

7 That the accused No 1 is a member of the Ldsyntrainjur Unio 7 That the accused No 1 is a member of the Ldsyntrainjur Unio 10 Bord nonunited by the learned Sub Divi ional Officer who also sen Petitions of complaint to him for enquire and report. The sud acc

was also appointed as Polling officer by the Sub Divisional Officer in the in the last Council Election

8 That in connection with many affairs of the Local Board, Union Roard and Thora Charitable Dispensary, your petitioner is not on very good terms with the learned Eulo Divisional Officer

9. That the leatned Sub Divisional officer recommended one Panchanan Chan, dur for a membership in the Local Board in place of your petitioner who was the atting member and some of the members of the Minaging Committee of the Avasaliar Simaj moved the District Magistrate of Howard to set aside the learned Sub Divisional officer's recommendation with

regard to the stull Pancharan Chongilar

10 That one Srinbrah Mondri clerk in the Local Board (who is also a clerk in Ulinbria Jul of which the Sab Divisional other is the Superintendent stands charged with receiving illegal gratification at the instance of your perturneer and piece are sunder decision by a Sab Committee of the

and Local Board

If That your jettioner on the 12th day of July 1921 compliant laguastions Gopal Chandra Mondal, viced resident Singti Union Board (who is also a member nominited by the tearned Sub Divisional officer) to the Channan District Board and he has been warned to mend his

nays

12 That one Jatindra Nath Khan was a member of the Singit Than
Charitable Dispensary Committee nominated by learned Subdiaisonal
officer and on the petitioners motion he had to resign his post as a member
of the suid committee. The said Jatindra Nath Khan is allo a member
of the Singit Union Baard nominated by the learned sub Dissional officer
and your petitioner also made compliants against him to the Divisional
Commissioner and other's for his removal therefrom

13 That your patitioner moved the Datrict Migistrate of Howrah for the transfer of the moore case, under Section 528 Ct P C but the larned Datrict Majastrate by insorder dated the 20th day of September 1924, rus to the sail restlictions

14 That your pentioner being a perfected by the said or let of the District Magnetrate legal to more your Lordship, on the following amongst other

Gr unle

(I) For that under the facts and creamstances of the case as stated above the learnest District Magistrate ought to have transferred the said case to some other supercrat Magistrate.

> Your petitioner therefore press that your Lordships may be pleased to call for the records of the case and to issue a Rufe upon the District Magistrate of Howrah

and upon the opposite parties to show cause why the aforesud case should not be transferred to some other competent Magistrate within the District and to pass such other or further orders as to your Lordships may seem fit and proper and pending the hearing of this application further trocedings may be stayed

And your petitio ier as in duty boun I shall es r prix

Aft Irest

I Bholanath Chaudhari son of Late. Bibu Promithe Cheutheri by occupation landhold r & merchant resident of 13 for Rajendra Pond do hereby solemnly affirm and ers as follows -

I That I am the petitio ier and as such I am fully conversant with all the facts of the care

2 That the facts stated in the above petition are true to my knowledge Pret ared in my office

Signature Vakit

Enlemnly affirmed this the 29th day of September

1921 before me

8d M S Abder Rah Commissioner

Petition of Appeal of the accused received from jail. From Dina Bandhu I riv alus Thakur who was sentenced on the 4th September 1929 to death under section 302 I PC by the Addl Sessions Judge, 24 Parganas Alipore

Shewith that your humble appellant is quite innocent in this case

That your poor appellant knows nothing about the charge of murder brought against him About a year ago he kept a hotel One woman Pajabala by name used to serve in his hotel as a mild servant and she would do prostitution outside.

That about 5 or 6 months ago as the appellant mentred a loss he had to

abobsh the hotel and start working us a cook

That the aforesaid Rapibala used to come to the appellant and abuse has and even she would come to the place where the appellant worked and shower abuses on him and put a claim for her arreit pay That after a few dars the poor appellant give up that job and started a small chop shop That Rapbala used to come to that shop and quarrel with the sppellant is known to the peorle residing near by

That the humble appellant is innocent and knows nothing about the fact who was murdered by whom in Raisbala's house. That as Raisbala had grudge against the appellant she brought this charge against him

That the very day the murder was committed the Police went to the appellant's shop at 12 P M but as he was asleep they entered into his house and struck him with a lathi which caused a mark on his back. After this they reported to the officer in charge of the thana that he got it when cutting a sind which is totally false

That when the Police arrested the appellant there was no blood stain on his body or cloth That the fact that after 15 or 16 days the police got his nails cut and the doctor stated in his evidence that there was blood stain in them was absolutely false

That the records of the case against the poor appellant may kindly be perused and prerogative of justice may be shown to him by acquitting him from this case and sparing his life

Left thumb impression of Dina Bandhu Uriya (alias Thakur) Attested by Sd H C Mitter. Deputy Jailor

Countersigned

8d Illegible Major IMS

Superintendent, Alipore Central Jail

Petition of appeal filed by an advocate Dinabandhu Uriya (alias Thakur) Annellant

Through

Hiralal Ganguli, Advocate

IN THE COURT OF JUDICATURE AT FORT

WILLIAM IN BENGAL

Criminal Appellate Jurisdiction Criminal Appeal No 639 of 1929

Dinabandhu Uria (ilias Thakur) Accused, Appellant (in Jail)

Versus

King Emperor Under Secs 302 and 326 I P C

Petition of Appeal

The appellant above named being aggreeted by the judgment and order of S N Modal Lsq ICS, Additional Sessions Judge of Alipur, dated 4th September 1929, convicting the appellant aforesaid in Jury trial No 10 of July Sessions for 1929 under sections 302 and 326 I PC and sentencing him to 4 years' RI to run so long as the sentence of death is confirmed !)

ALPENDIX

40a

this Hon'ble Court, is not executed, begs to prefer this petition of appeal to the Hon ble Court on the following amongst other

Groun ls

- I. For that having regard to the evidence on record and the facts and circumstances of the case the conviction of the accused under Sections 302 and 326 is bad and unsustainable.
- II For that the conviction and sentence of the accused is bad in law as well as on facts

III For that the learned Additional Servious Judge was wrong in not explaining to the Jury the exceptions in section 2001 PC and in directing the Jury to the first that the Jury need not consider any of the exceptions in the said section in the present case and the said omission and direction amounts to a material misdirection and the accused has been seriously president thereby

IV For that the learned Additional Sersions Judge was wrong in not drawing the attention of the Jury to the second put of Sec 304 I PC and in not explaining the same to the Jury with reference to the facts and circumstances of the case and the said omission amounts to a misdirection and has seriously neguided the accused.

V For that while dealing, with the alleged motive for commission of the present erime the learned Additional Sessions Judge has wrong in not explaining to the Jury the alleged previous circumstances from the point of view of the accused and the said omission has materially prejudiced the accused.

VI For that the learned Additional Sessions Judge was arong in not giving the jury any direction as to the exceptions in section 300 I P C having regard to the nature of the evidence and the facts and circum stances of the case

VII For that while dealing with the suggestion of alibi, and while directing the Jury that there was no endence to prove the said suggestion of alibi the learned Additional Sessions Judge was wrong in not asking the Jury to draw adverse inference against the prosecution this point from non examination of Sindhi Beri is a prosecution witness illinoid; he was examined by P. W. 22 Saib In-pector Basenta Makherji and was a material winter.

VIII For that having regard to the discrepancies in material particulars among the P Ws the surrounding circumstances and probabilities of the case and the evidence on record the conviction of the accused under sections 302 and 3% I P C 13 unaustainable

IN For that having regard to the facts and circumstances of the cise the sentence of death it any rate is too severe and is otherwise magnetanable.

A 1 or that the sentence 1 weed upon the accused under a

and 326 I P C are too severe, having regard to the facts and circum

And the appellant as in duty bound shall ever pray

stances of the case

List of papers-This petition of appeal

Vakilatnama

_1

The copy of heads of charge to the Jury and the verdict and sentence may be dispensed with, this appeal heine against sentence of death

1

Sd Hiralal Ganguli Advocate for the appellant

IN THE HIGH COURT OF JUDICATURE AT FORT WILLIAM IN BENGAL

CRIMINAL APPELLATE JURISDICTION.

period

In the matter of an application under section 419 Criminal Procedure Code

And

In the matter of Abdul Momin Accused Petitioner

Versus

The King Emperor

And In the matter of an order of Mr T J 1 Roxburgh Chief Presi dency Magistrate, Calcutta dated the 28th April 1930 consisting the petitioner under section 120B read with Section 117 and 147 I P C and sentencing him to undergo rigorous imprisonment for one year and under Sect on 117 read with Sections 143 and 147 I P C (but no separate sentence having been passed under the other sections) and an order to execute a bond of Rs 2000/- with two scentities of Rs 1000/- each to Leep the peace for 3 years, in default to suffer simple imprisonment for the same

API ENDIN

To The Hon'ble Sir George Claus Rinkin M. A. Kt. Chief. Justice and his Companion justices of this Hon ble Court

The humble petition of the above numed appellant

407

Most Respectfully Shewth -

- 1 That your petitioner along with others was put upon his trial before Mr T Roxburgh Chief Presidency Magistrate, Cilcutta under section 120B I P C read with sections 117 143, 147 I P. C to wit conspiricy, to abet the commission of offence of noting and causing the assault of public authorities
 - 2 That the case of the Prosecution was as follows -
 - (a) That there were several meetings of the Carters' Union m Calcutta

(a) on 6th February 1930 (4) on 16th February 1930

(int) on the 23rd February 1930 and

(re) 30th March 1930

that at the first meeting your petitioner only explained the utility of the said I mon

- (b) That at the other said meetings held in different parts of the town of Calcutta your actitioner made no speech but at the third meeting he only acted 18 Secretary and collected some subscriptions
- (c) That pursuant to the resolutions passed at the meeting of the Carters Union Cirters of Calcutta refused to pay times on conviction in Criminal Courts and preferred to go to rul instead and on the 1st April list took out their earts on the streets and during middly unvoked the buffilees from the said carts and blocked the parts of Harrison Road near its junction with Strand Road with the said carts causing a serious dislocation of traffic. That on the police authorities trying to remove the obstructions from the said road there was a serious clish between the Police and the said earters, so much that the police had to open fire
- 3 That your petitioner pleaded not guilty to the aforesaid charges and his defence was that at the first sud meeting he only explained the utility of the Union to formulate grievances and that at the third meeting he acted as Secretary and collected subscriptions from the carters and that beyond helping the Union with advice regarding the ways and meins of redressing the said grievances he had no part in the risting of the let April list That the afores ud meetings were bonated, and also in the interest of the carters of Cakatta
- 4 That at the trial the Pro-vention produced evidence in support of the charges framed against your patitioner but your patitioner submits that the only evidence so far as he is concerned brought on record by t Prosecution is to the effect that .

408

- (a) at a meeting of the Carter's Union held on the 9th February 1930 your petitioner only explained the utility of the Union
- (b) that at the third meeting he only acted as Secretary and collected subscriptions
- 5 That the learned Magistrate by his order dated the 28th April 1930 found your petitioner guilty under Section 117 read with Sections 143 and 147 I P C but passed no separate sentence but convicted your petitioner under Sections 120B read with Sections 117 and 147 I P C and sentenced him to undergo rigorous imprisonment for one year and to execute a bond of Re 2 000/ with two securities of Ps 1 000/- each to keep the peace for 3 years in default to suffer simple imprisonment for the same period
- 6 That being aggrieved by the aforesaid order your petitioner begs to prefer this appeal in this Honble Court on the following amongst other

Grounds

I For that on the evidence on the record the elements necessary to constitute an offence under Section 190B read with sections 117 and 147 of the Indian Penal Code and an offence under Section 117 read with section 143 and 147 I P C have not been proved in the case

For that the charges as framed are bad in law and the accused has been prejudiced at being tried on these charges

III For that the charges as drawn up in the case were vague and prolix and did not give the appellant a proper notice of what he had to meet

IV For that the common object charged of the alleged assembly did not constitute the said assembly unlawful within the meaning of Section 141 of the Indian Penal Code

Y For that the learned Manistrate ought not to have placed any reliance upon the so-called reports Exhibits 5 2, 3 and 6

VI For that the circumstances under which the said reports were made demonstrated conclusively that they were not true and futhful reports of the speeches made at the meetings

VII For that the said reports being admitted based upon the recollection of the reporters who took no notes and who purported to jot down only such passages as they deemed to be important divorced from the context and the full text of the speeches not having been before the Court the conviction based on these reports is unwarranted and illegal

VIII For that the absence of any evidence to show or suggest that the petitioner made any speech instigating the carters to break the 1 ca c or do any unlawful act the convict ons are unsustainable

11. For that the learned Magistrate is wrong in supposing that at any the meetings at which the appellant was present he supported any a ton by the Carters leading to an offence under section 14 I P C

- A For that the perusal of the entire reports of the meetings attended by the appellant makes it abundantly clear that no offence was committed by the appellant
- XI For that the learned Magistrate has failed to notice that the conduct of the appellant after the rioting was incompitable with the allegation that he was a member of the constitute as charged
- VII for that the learned Magistrate is wrong in holding that there was any conspiracy or inflimatory statements by the appellant in fact there is no evidence on the record to support that statement
- AIII For that there is no evidence on the record to prove that the appellant at any time insisted the movement to cuise obstruction to the Public Streets or that he entered into any consouracy to do the same
- AIV For that no foundation having been laid in the evidence for holding that there was any conspiricy between the different recursed persons the learned Magistrate has erred in I with admitting in evidence aguinst the appellant the words and actions of the other accursed persons
- VV For that the learned Magistrate is wrong in law as well as in fact in holding those who intentionally brought about the situation on the 1st April must be presumed to have intended that there should be these assults on the Police?
- NI For that in the absence of any evidence to show that the accused at any time instigated or even anticipated the use of force by any member of the assembly the learned Migratian is wrong in holding that the charge under section 1.0B real with sections 117 and 147 I P C has been made out
- NII For that the learned Magistrate ought to have found that the appellant either instigated or combined with other persons to instigate the use of criminal force for the action of the Carters on the 1st. April before he could convict him of the offence charged.
- XVIII For that the meeting per se being held publicly and openly for the redress of gree vinces in furtherance of the formation of a trade union and there being no finding as to the virce sugge tion or support or smultion by the appellant of the happenings of the 1st April conviction is had in law.
 - II For that at any rate the sentence is much too severe
- AN 1 or that the order under section 100 Cr P C is not warranted in the circumstances of the circ

And your petitioner prays your Lord hips may be pleased to call for the records of the case and a limit this appeal and direct the petitioner to be released on had pending the

IN THE HIGH COURT OF JUDICATURE AT FORT MILL AM IN RENGAL

CRIMINAL APPELLATE JURISDICTION

In the matter of an application under section J19 Cemanal Press dura Coda

And

In the matter of Bankim Ch Mul beries Accused Petitioner

Voruna

The Line Emperor And

In the matter of an order of Mr T 1 1 Roxburgh Chief Presidency Magistrate Calcutta dated the 29th April 1930 convicting the neutioner under section 100B read with Sec tions 117 and 147 f P C and sentencing him to undergo rigorous Hen risonment for one very and to execute a bond of Re 2000 with two surities of Ps 1000 each to keep the peace for 3 years in default to suffer simple impri onment for the same record

Γa

The Hon ble air George Claus Rankin Lt Chief Justice and his companion Justices of this Hon ble Court

fully

The humble petition of the appellant abovenamed most respect

SHEW DTH

- 1 That your petitioner is the Presi lent of the earters. Union a body formed for the protection of the interest of the carters and Chowdhurys plying their earts in the city of Calcutta
- 2 That your petitioner along with others was put on his trial before Mr T Royburgh Chief I resi lency Magistrate Calcutta under section 1ºOB I P C rend with Sections 117 and 143 and 147 I P C to wit conspiracy to abet the commission of offence of rioting and causing the assault of public authorities
 - J That the case for the prosecution inter alia was as follows -
 - (a) That there were several meetings of the Carters Union in Calcutta viz (1) on the 9th I chruary 1930 (2) On 16th February

111

1930, (3) On 23rd February 1930 and (4) On 30th March 1930 That the first meeting of the Union was presided over by your patitioner

- (b) That at the said meetings which were held in different parts of the fown of Calentia many carters and Chowdhurys were present. That in the first meeting your petitioner was appointed is Charman of the Carters. I mion and in thanking the meeting suid that the Curters must hold meetings in different centres for propaganda.
- (c) That pursuant to the resolutions passed at these meeting of the Carter's Umon Curters of Calcutta refused to pay fines on conviction in Criminal Courts and elected to go to juil instead and on the list of April last took out their curts on the streets and during midday unvoked the buffalors from the said carts and blocked the part of Harrison Read near its junction with Strand Road with the said carts crising a serious dislocation of traffic That on the police authorities truing to remove the obstructions from the said road there was a serious clush between the Police and the said carters and so much so that the Police bud to open fire
- 4 That your petitioner pleaded not guilty to the aforeand charges and his defence was that beyond presaling at one public meeting of the Cutters held to disc westurer greatmees and beyond betting the timos with divice regarding the ways and means of redressing the sail graceances he had no put in the rotting of the last Varillast That the aforeand uturities of your petitioner were bonafide public activities in the interest of the Cutters of Calciutt.
- 5 That at the trail the pro-cention led evidence in surport of the charges framed against your petitioner but your petitioner submits that the only evidence so far as he is concerned brought on record by the prosecutions to the effect that.
 - (a) at a meeting of the Carters Union held on the 9th I character 19.0 your petitioner was appointed as the Charman of the newly formed Carters' Union
 - (b) that your petitioner was present at the sud meeting and male a speach asking the earters to hold meetings in different parts of the town for propagand;
 - (c) that your petitioner was on one occasion present at the Raukshall Pales that when the cossanstituted by the Pit it granst the curture were going on
- 6 That the learned Magastrate Mr. Roshurgh, however, by his order dated the 24th April 19 0 found your petitioner not guilty und section 117 read with Section 147.1 P.C. and acquitted him of the charge but convicted your petitioner of the offence under section 1.

with Sections 117 and 147 I P C and sentenced him to undergo rigorous imprisonment for one year and to execute a bond of Rs 2000 with two sureties of Rs 1000 each to keep the petce for 3 years in default to suffer simple imprisonment for the same petual.

7 That being aggreered by the aforesaid order your petitioner begs to

Grounds

- 1 For that on the evidence on the record the elements necessary to constitute an offence under section 120B read with section, 117 and 147 of the Indian Penal Code have not been proved in the case.
- 2 For that the charges as framed are bad in lay and the accused has been prejudiced at being tried on these charges
- 3 For that the charges as drawn up in the case were vague and prolix and did not give the appellant a proper notice of what he had to
- 4 For that the common object charged of the alleged assembly did not constitute the sud assembly unlawful within the meaning of section 141
- of the Indian Penal Code
 5 For that the learned Mustrateought not to have placed any reliance
- upon the so called reports Exhibus 1, 2, 3 5 and 6
 6 For that the circumstances under which the said report were made demonstrated conclusively that they were not true and faithful reports of
- the speeches made at the meetings
 7 For that the said reports being admittedly based upon the recollection of the reporters, who took no notes and who purported to jot down only such passages as they deemed to be important divorced from the contest
- and the full text of the speeches not having been before the court the conviction based on these reports is unwarranted and illegal 8. That in the absence of any evidence to show or suggest that the returner male speeches introduce the cartes to been the precept of the court of
- petitioner made speeches instigating the Carters to break the peace or do any unlawful act the convictions are unsustainable
- 9 For that the learned Magistrate is wrong in supposing that any of the meetings at which the appellant was present he supported any action by the carters leading to an offinee under section 147 I P C
- 10 For that the perusal of the entire reports of the meetings attended by the appellant makes it abundantly clear that no offence was committed by the appellant
- 11 I or that the learned Magistrate has fulled to notice that the conduct of the appellant after the rioting was incompatible with the allegation that he was a member of the consuracy as charged
 - 12 For that the learned Magistrate is wrong in holding that there was
 - conspiracy of inflamatory statements by the appellant, in fact there is

413

- 13 For that there is no evidence on the record to prove that the appellant at any time insisted the movement to cause obstruction to the public Streets or that he entered into any conspiracy to do the same.
- 14 For that no foundation having been laid in the evidence for holding that there was any conspiracy between the different accused persons the learned Vigustrate has erred in law in admitting in evidence against the appellant the words and actions of the other accused persons
- 15 For that the levened Magn-trute is wrong in law as well as in fact in holding those who intentionally brought about the situation on the 1st April must be presumed to have intended that there should be these assaults on the police
- 16 For that in the absence of any evidence to show that the accused at any time instigated or even unterpreted the use of force by any member of the assembly the learned Ma_sistrate is wrong in holding that the charge under section 120B read with Sections 117 and 14" I P C has been made out.
- 17 For that the learned Magnetrate ought to have found that the appellant either restigated or combined with other persons to instigate the use of criminal for e for the action of the Carters on the 1st April before he would count him of the officers clared.
- 18 For that the meeting fer being hell publicly and openly for the reduce of gines in es in furtherance of the formation of a trade union and there being no bading, as to the a time suggestion or support or stimulation by the up alliant of the happenings of the lat April the consistion is bad in law.
 - 19 I or that at any rate the sentence is much too severe
- 20. For that the order under section 106 Cr. P. C is not warranted in the circumstances of the case

And your petitioner prays your Lordships may be leved to call for the records of the eve and admit this appeal and direct the petitioner to be releved on bail pending the hearing of the area!

And your petitioner as in duty bound shall ever pray

IN THE HIGH COULT OF JUDICATURE AT FORT

CRIMINAL REVISIONAL JURISDICTION

IN THE MATTER OF MILL (MILON Under Section 420 of the toda of Criminal Procedure and

IN THE MATTER OF LADHU RAVI SONAR

Accused Petitioner

Versus

KALURAM AGA

To

The Hon ble Sir George Chus Rankin Kt Cluef Justice and His Companion Justices of the said Hon'ble Court.

The humble petition of the above-

Sheweth -

- I That your patitioner has been convicted by Mr. H. K. De Pourth Prasidency Vegistrate Calciuta under section 106 of the Indian Penal Code and senterced to pay a fine of Its 200;—in default two months rigorous amprisonment and the fine if paid will be paid to complainant ascompensation.
- 2 That the accused belongs to Joypore within the Native States and he was brought down to Calcutta under an extradition warrant on the allegation that the complainant Kalurim Agarwalli entrusted the accused with 3. Bhurra and 73 annis Weight of gold on one day and a further quantity of three bhurra and twice annas on a subsequent day for preparing organization, and a subsequent day for preparing organization.
- 3 That on the twenty fifth day of January 1930 complainant filed the petition before the Additional Chief Presiden y Magistrite for process against the accured, whereupon the learned Magistrate examined the compluinant and orderd D town police to enquire and report by the 10th of February 1930
- 4 That on the 7th of February 1930 the Police made a report saying that the accused could not be found
- 5 That on the tenth day of February one thousand nine hundred and thirty the case was adjourned to the twenty serenth day of February 1930 and on the latter date the complainant was absent and the puting of complain was dismissed under section 203 of the Crimial Procedure Code
- 6. That on the first day of March 1930 the complunt was revived and observes a warm arms of the seventh object of March 2550 on which doke certain wincess were examined before the Additional Chief Presidency Magnetria and the case was adjourned to the twenty fourth day of March one thousand nine hundred and thirty. On the 24th March the case was a, an adjourned to the first of April 1970 a Warrint was issued against the accused under section 1961 P. C. making it returnable on the extremt day of April one thousand nine hundred.

7 That on the third day of April 1930 although that was not the date fixed for the next hearing of the case the following order -

Par Haridhone Dutta Bahadur to kindly record the evidence and report as to issue of the extradition Warrant?

8 That thereafter certain evidence was recorded by Ru Bahadur Hundhone Dutt Honorary Magistrate Celeutte and on the tenth day of April one thousand nine hundred and thirty the said learned. Honorary Presidency Magistrate recorded the following order —

Three more witnesses examined extradition aguist Ladhurum Soner only recommended Put up before the Additional Chief Presidency Magistrate

Ftc Ftc Etc

In the Court of the Sessions Judge Assam Valley Districts
(Criminal Appeal)

Am, Imperor Ve -1 Sewlochan Sing

2 Sew Latan Sing-Appellants

Sew Katan Sing—Appella
 Sraban Sing

Shawn eng (Nos I & 2 convicted under \$1471 P C and sentenced to 3 months rig Imp and a fine of Ps 50 and No 1 sentenced to undergo rig Imp for 4 months and to 4 fine of Rs 30/1 under setting 147 372 IP C)

The humble appellants above named beg to prefer this appeal against the decision of Rabu P > Das E A C and I rest Class Majestrate sentencing them as above on the following amongst other

Grounds

J For that the learned Magastrate after finding in his Indement that the Serang and his men first as sulted Sameswar which led to a mutual fight between the parties on the steamer erred in fact in not holding, that the fight with brick bats and pellets was continuition of the first started by the khalvass and that they were the aggressors

2 For that the learned Migistrate erred in his in laying down the principle and acting upon the same in that if two witnesses identified the accused he was found guilty of righting.

3. For this the lower court erred in not taking into consileration the exidence of 'ff' currie when he states on earth that the cooles were brethanded whereas the khalless had iron 1 are and also that when the cooles were going towards the bank the khall is were throwing pelletsfrom the lows of the steamer.

1 For that the learned Magistrate ought to have held after fin that the Khalasis were the aggressors that some sort of defensive

was necessary on the part of the cooles to stop the Khalasis from throwing missiles at them and if some of them threw missiles in defence to cover their retreat of the rest they did not exceed the right of Private defence.

- 5 For that regarding Appellant No 1 Sew Lo.lian there were the crudence of only two wincesses viz P Ws 9 & 10, but the learned Magistrate committed a great error in not directing his attention towards the stutement of witness No 9 Moñzal Khan before the identifying Magistrate wherein he clearly stated that Sew Lochand ind not take any nart in the
- 6 For that witness No 10 Figur Rahman also did not state in the identification purish that Sew Lochan threw stones
- 7 For that prosecution witnesses were examined in two batches and it was only the witnesses of the list batch examined on 13 11 26 (P Ws 9 & 10) incriminated appellant No 1
- 8 For that the lextred Magistrite held your humble appellant Stilling Sing guilty mainly relying on the testimony of witnessess were not presented at the identification praide and no exist actory explination had been juven for this unportant omission and the lextred Magistrate ought not to have found him guilty without sufficient corroboration from other sources.
- 9 For that the above two witnesses were witnesses examined in the second batch and as such their testimony ought to have been taken with treat cutton
- 10 For that regarding No 2 viz Sen Ratan Sing the learned Vigistrate relied on the evidence of only Viotur Rahman and Vir Havelock ignoring the fact that this former contradicted himself in his cross examination and the latter was not present at the time of the throwing of the missiles
- 11 For that in view of the fact that the other witness P W 2 Mr C C Harclock on whom the Magistrate has rehed for convicting your humble appellant Searstain was not named in the charge sheet and the fact that no other witness examined in court referred to him as being ireent at the time of occurrence read with the definite statement of P W 1 Mr R A Currie who said that Mr Harclock came when all was quick and of P W 9 who said that Mr Harclock came when all was quick and of P w 9 who said that Mr Harclock the learned Magis trate should not have placed any reliance on his testimony as being uncontrovertable or safe
- 12 For that considering the fact that the trouble was started by the Abalasis in a cowardly way i e by first assuming the cooles getting them made their steamer the learned Virgi trate, should not have taken in h a serious survey of the second part of the occurrence inspite of the f ct index as elect of laving one man is fo, injured in the affraj

APPENDIX 13 For that the learned Magistrate fulled to take into consideration

the fact that the witnesses who identified the present appellants saw them only for a second or two while in the alleged act of throwing stones amongst nearly 100 men and their identification could not be infallible without proper corroboration from reliable and independent Santees. 14 For that under the circumstances the sentences are very

Bevere Under the above circumstances the humble appellants pray that

the appeal may be admitted that the same may be heard after calling for the record and that the humble appellants may be released on bail For which act of kindness as in duty bound the appellants shall ever pray

(ASSAMESE)

In the Court of the extra Assistant Commissioner of Dibrugarh

Copy of petit on dated 4 10-26 field by Hen Mura in case No. 1146 C 26

ক্ৰিল প্ৰক্ৰিপৰ যো ডিব্ৰুগড় যৌজদাৰী আদালত। তুকি ৬/১১/২৬

| क्षिः साम | আধামী | शंक्ष | ভা | স'ফী |
|--|------------------|----------------------------------|-----|--|
| ভীংনে আহম নি' চ'ছৰালি গাও মৌলা অঃপুৰ | ১। ইংগাদী আহম ং | দ: বিঃ <u>৩২৪</u> ৪৪৭ ধাবা | 2/0 | ১ ৷ হীস্বৰ্গ ২ ৷ কণিয় নণৰি ৩ ৷ উন্মূখনী গৱেহ |

धर्षादहार ।

১না আসামীৰ মাটা কৈবাদীৰ ঘৰৰ সন্মুখত আছে, অনুৰ বিনা কৈবাদীৰ পিশাসক এখাটাখাৰ मह (बाहे श्वृति व्दरेत केंक्र व्यानामीन माहेरन वि वनेन व्यानात मा व्यानामीन निपन्न तथाह গানি দিয়াত ফৈৰাদিয়েত কিয় গানি ধিছ বুলি কোৰাত নি ১/২ না আনামিক শিকৰ ম'ৰ কঃ বে, মোক গালি গাৰিছে বুলি এই কৰা কোৰাত ২ন আসামিত ঘৰত নাডাৰ বুলি কোৰাত তেতিয়া ২, ৩, ৬ বং আনানি হতে আহি অনুক্ৰিন থাবেশ ক্ৰমে ব্যাক নাগৰ পাৰাৰ পৰা বেলা মানি নি ২বং আনানিত্ৰ আৰু তেই ছান বুংবে এবাৰ নাৰে তাৰ পাছত ১নং আনানিত্ৰ মান কোনানিত্ৰ কাৰে বাবে, তেতিয়া মাহেৰ আছিন ভালে, তাৰ পাছত ৬নং আনানিত্ৰ ভবিত একেৰে নাকে, তেতিয়া মাহেৰ এবোৰাই দিবে পুলিশত আছি ইনাকথা বৈ কৰৰ দিয়াত পুলিশে কৈৰাদিক ছালগভালত লাহিবো! এতিয়াকৈকে পুলিশে বোৰৰ্কৰো চালান বিশ্বাত আৰ্থনা যে, পুলিশৰ ভালাক আছিল। কিবল আনানি কোনানিত্ৰ আৰ্থনা যে, পুলিশৰ ভালাক আছিল কোনা কিবলাক আৰ্থনা যে, পুলিশৰ ভালাক আছিল কোনা কিবলাক আৰ্থনা যে, পুলিশৰ ভালাক আছিল কোনা কিবলাক আৰ্থনা যে, পুলিশৰ ভালাক আছিল কোনা কিবলাক আৰু আৰু আলাক হল আলাক কোনা কিবলাক আলাক কোনানিত্ৰ

লেপক— Sd/- মদন।

(HINDI)

सुदर्द स्थानेष्ठ रणा— इन्डः ताः भागवीर गुढंग बाड जुरीमच मारवारी १ भामज्ञा खरखान टीन बाड नर्य नराइन प्रधान राखार्म खरखान वाजार मारपीठ करना ८ वर्ज रात २॥११।४०

रात २४।११।२८ सदमो हिलकार्ट

जनाव चाली—रिपोट्ट घरज करता हुं जयर विखा तुदाविह होनी चादमी दिवनार्टे 'रोड तारापुर कप्पनी दोकानके सामने सारपीट पुढ़ा पुष्की क्यूप्तरे करता दा हम आर्क दुटा दिया निष्ठे नम नारायेन प्रधान भारके साजते करक चना तीवा तो जुदोनन सारवारी पपना पर्या आपित दिवती के कर पाया तो नेन नारादेन प्रधानको सारया वे इससे सार्रेसा वेशक चानेसे जुरीमाल सारवारी को सम्माया वो पीछतील ट्रेस्चनेकी काहतीय नहीं या वार्ष रीपोट्ड घरण करता हुं उचीत करवार्र चरनेकी इनुरम्न सरजी होव घरण किया गिरा

सही है: सानवीर गढ़ ग रप्राहरारट

चत्रारं-मानवाहाटुर कती चीकीदार

खरसाय रेलवे ध्ट्रेसन (१) का नरशाहादर धापा (२)

का जमन बाहादर वापा (१) खरशान टीन

সাকী

১। সমজত আলী মির্দে

২। খোলাবল মির্ছে

৩। হত্যাদ আলী ছির্দে

বালী

ইদেগ শেসমন্ত্রীর হৈছে

मु** द*क्टन्ड

গ'না বালনাৰ

অগ্নামী

APPENDIX

। ব্রিমব্র মির্ফে

२ । करियवस जिल्ह

ত। আংহর লালত

| | 1 11-3 1-110-14 | A 1 Kindled activity before |
|------------------------------|---|---|
| | ৪। বেকিবদীন মির্দে | नाः वाद्यस्य |
| | चारङ्गशालक मिर्प्त | ৪। গোলাম পাঞ্চা |
| | वारङ्ग आविष्ठ निरम् | া এবাই বয় দেখ |
| | সা• বার্ডদহ | শ* রাশা |
| | । নোসিঃখীন মির্ফে | ৩। হেশালদীন আৰপ |
| | ৮। আবহুণগোকুর মিদে | দা • প'ইকপাড়া |
| বে'কদ্বা ৪৭ ৩২৫ | ≥। শেখ খালীবয় | ণা রেয়ানভুলা |
| ৩২৩ ৫ • ৪ ধরি | শ রানা | ৮। ছেমিদেলহক মির্দে |
| | | । তপজাল হোদেন মিশ্ব |
| | ইয়া ছাড়া আরও | ১ । গোলামরহ্মাণ মির্দে |
| | >• জন ল'টিয়াল ছিল | ১১ ৷ ভূবৰ সাম্স্ত |
| সিলস্থানত তে কেবলৈ ই | রাজি ২ই কেঞ্জাবি বাশো ২৬ | Div avata ve atarna |
| সহাল বেশা আক্ৰাত্ত ৬৬বি সময় | | |
| | হত্তে আমিদ্রি স্ক্রোধাবণের হ | |
| | গালাজ কয়ত খন আনামীর হয় | |
| | ান্য প্রতান আনান্য হয় বিহা বিহা গুরুতর জবন করিয়াছে | |
| | | |
| | বাটীৰ থাঝা আনার বাম হাবের | |
| | আস'মী লাটার ছারার আমার ব | |
| ও রজপাত বরিয়াছে। ১ বং স | াৰী আনাৰ ভাইপো বিধাৰ হা | ড়াইতে হাৎহার ৬না আসামী |
| লাটর হারায় তাহার বান হাত | দর কর্বতের উপরে ৮বা আদা | মী লাটীর ছারার তাশার বাম |
| হ'লে ও ৯ন' অ'দানী ল'টার | ছারাণ তাইার বাম বেডাডে ম | ারিঃ। তরুদর জগম করিংশছ |
| অব্যাদের জগম ধাগদাপ সরকা | হী হাদপাদশৰের ভাতনার বাব্র | इ'उ'द गृहे'का कड्र'द्रा' (र |

সাধিদেট পাংহাতি তথা অন্তেহ বাখিল করিবাদ গত কথা আমার প্রথমের বর্গণ আব প্রথমে চুল্ড নালিল করিতে পার্থি নাই। আমারামের করিব এই যে আমার্থিক পথিবের বিবট আছির তার্যার বিষ্টিত লোক ইলৈছে চটনার বংশুক লগত উত্ত আমার্যার করিব আমারামের সাবাহরের একটা করিবলামার বিজ্ঞাকরিবলার যে কৈয়ারী করিবাদ করি আজ ব বিক্তি সাবাহরের একটা করিবলামার ক্রিকার সত্তর আসাবাশিক রক্তান আমার্থিক বি চুশংহা বিধার টেটা কলার আনি মাগতি কলিন স্কুল মাসামীশ প্রকর্গ একখাশ উত্তর্গ অন্যান্ডার করিশাহ। অন্তরে আর্থনা টক্র হারান্ড আসামী সলগে বিচার করিল আলোক।

ज्ञित्यक हे^{ट्}र—अस्थि

বালি দেবিৰজীন নিৰ্ভাৱ ২ যা ও ভাছিতের লিটিশনের ৩ ঐ াাছিতের এ নোকজনা উঠাকো জনসন্ত বংলাশ্বর জন্মনা নকম প উঠাইনা জইবার বংলাশ্বর উপর দেশুনী বাবুর ঐ নাধিবর হয়নে অধেবানকম।

INDEX

| Subject | Page Subject | | Page |
|-------------------------|------------------------------|-----|--------|
| A | Act IV of 1897 | | 11 |
| Abatement | 219 V of 1893 see Cr P | ٠. | 11 |
| Abdomen | 202 7 . 5 2000 | | 11 |
| Abduction | 9.164 | | 11 |
| Abetment | 8.70.364 | | 10 |
| Accomplice | 107 " III of 1910 | ••• | 11 |
| ,, uncorreporated | , V of 1910 | | 11 |
| testimony o | | | 173 |
| Accused Guarentee of | 296 , X of 1911 | | 11 |
| Acquittal . | 201 / 2777 - 5 1011 | | 10 |
| Act | 1 364 " VIII of 1912 | • | 11 |
| Act XI of 1856 | 10 , II of 1914 | • | 10 |
| " XIII of 1557 | 11 , VIII of 1914 | ٠ | 11 |
| " XXIII of 1857 | 37 . 3777 . 6 1017 | | 10 |
| , V of 1861 | 150 " 7515 . 5 1010 | | 11 |
| " XVI of 1861 | 11 . XXXIV of 1920 | | 11 |
| II of 1966 (Bengal) | 10 " XXXIX of 1920 | | 10 |
| , IV of 1866 do . | 10 , II of 1922 (Bengal) | *** | 11 |
| , of 1567 | 11 XXII of 1922 | | 11 |
| . XXII of 1867 | 10 III of 1223 | • | 10. 22 |
| XXV of 1867 | 10 . IV of 1923 | • | 11 |
| , I of 1871 | 11 , VIII of 1923 (Bengal | , | 10 |
| " XXXI of 1871 | 11 , XIX of 1923 | • | 11 |
| " IX of 1874 | 10 VI of 1921 | | 10 |
| , XIX of 1876 | 10 XXIII of 1931 | | 11 |
| " XV of 1876 | 10 " XXI of 1932 B C | | 10 |
| " I of 1878 | 11 " XXIV of 1932 | | 10 |
| " XVIII of 1580 | 11 , IV of 1932 B C | | 10 |
| XVI of 1581 | 11 X of 1932 | | 10 |
| XII of 1882 | 11 VIII of 1932 B C. | | 10 |
| ,, III of ISS4 (Bengal) | 10 XII of 1912 B C. | | 10 |
| ., II of 1886 B C. | 10 XIX of 1012 B C | | 10 |
| ., VI of 1588 | 10 , XXVII of 1931 | | 10 |
| " II of 16SS | 10 1 IX of 1933 | | 11 |
| " XIAIXO . | 11 Act done in furtherance | at | |
| Act III of 1891 | 10 320 Common intention | | 70 |
| XII of 1500 | 10 Act when includes omissio | 1 | .71 |
| " III of 1897 | 11 Adjournment | | - 21 |
| | ~ | | |

Page

422

Subject

| puojecs | rage | Buojeci | Luge |
|-------------------------------|-------|-------------------------|-----------|
| Adult | 291 | В | |
| Adulterated | 361 | Badlivelihood | 274 |
| Adulteration of Drug | 37 | Bail | 2*1 |
| of food | 37 | Bailable offence | 360 |
| Adultery | 361 | Banker s Books | 36. |
| Advocate General | 364 | Being a member of an | 300 |
| Affidavıt | 364 | unlawful assambly | 30 |
| Affray | 8 32 | Bengal Municipal Act | 10 |
| Agent | 364 | Ret | 36s |
| Aid the doing of acts | 8 | Births Deaths and | 203 |
| Usen enemies | 19 | Marriage Registrat on | |
| Ambassador | 19 | tot | 10 |
| Ammunition | 364 | Bombs made of tens | |
| Anımal | 364 | bottles etc | 193 |
| Appeal | 287 | Book bombs | 193 |
| Appeal Petition of (before | | Breach of contracts of | 200 |
| High Court) | 414 | Service | 9 50 |
| Appeal Petition of (before | | Breach of Trust | 50 |
| Sess ons Judge) | 41a | Bribery | 9 |
| " Court of Sessions | 41a | Brit sh subject | 6 |
| to High Court | 404 | Brothel | 36.) |
| Applicant | 364 | Building | 365 |
| Application for bail | 390 | Burden of proof | 3G2 |
| , for revis on to | | Burnal place | 42 |
| District Magistrate | 392 | Bye Laws 'Municipal | |
| for revision to | | Pailways & Telegraphs | 177 |
| High Court | 397 | c | |
| for revision to | | ľ | |
| Session Judge | 321 | Calcutta Municipal Act | 10 11 |
| for transfer | 400 | Calcutta Police Act | 10 |
| Approver confession | | Police (Suburban) 1ct | 10 |
| of | 304 | Capacity of the accused | |
| Arms | 361 | | 5" |
| Arms let | 10 | Case Diary | 116 |
| Army deserter | 916 | Cattle | 366 10 |
| Art cle | | Cattle Trespass Act | 366 |
| testult | 45 4G | Cellular confinement | 160 |
| As aulting Governor- | _ | Certif ed copy | 100 |
| Ceneral let | 8 | | 30. |
| Association | 361 | | 10. |
| Asylum At nosphere noxious | 3,4 | | 366 |
| are adapticite noxious | 33 | Charas | 300 |
| | | | |

| | •••• | | |
|---------------------------|----------------|---------------------------|------------|
| Subject | Page | Subject | Page |
| Charge | 6G | Copyright | 366 |
| Charges for copies | 225 | Corporation | 12 |
| Cheating | 9, 50 | Costs | 294 |
| Cheating by professional | -, | Counterfeit | 366 |
| Ewindlers | 179 | Counterfeiting coin . | 9 |
| Chemical Examination | 10. | , currency notes | 9 |
| Chemical Examiner's | | , Govt. stamp | 9 |
| Report | 263 | Court of session 1: | 1, 15, 16 |
| Child | 43 | Courts | 366 |
| Children Act | 10 | Courts Hour of Sitting | 231 |
| Choukidars | 181 | Courts of Justice | 366 |
| Civil Courts | 185 | open | 231 |
| Cognisable Case | 366 | " Power of | 17 |
| Offence | 300 | Cranium and Spinal Canal | 262 |
| Com | 366 | Crime | 2 |
| Coin offence relating to | 9 | Criminal Appeal | 287 |
| Collecting Men, arms and | | Criminal Breach of con- | |
| ammunition | 8 | tract of service | 10 |
| Commissioner of Police | 298 | | 9, 50 |
| Common Carrier | 366 | Criminal Conspiracy | 30 |
| Common Gaming House | 366 | | 11 |
| Communism | | Criminal force | 9 |
| Compensation | 293 | | 10, 52 |
| Competent witness | 306 | " Investigation Dept | 174 |
| Complaint | 27 | Criminal misappropriation | 9, 49 |
| , Petition of | 28 | Criminal Law | 12 |
| Complaint | 26 | | 14 |
| " Examination of | 257 | Sec 157 | 171 |
| , who can become | 26 | | 174 |
| Compulsion or cocreion | 64 | , 110 | 177 |
| Concerling with intent to | | , 190 t | 177 18? |
| wage war | 1 | 1 1.0 | 182 |
| Concealment of Birth | 44 | n | 184 |
| Conclusive proof | 366 | . 172 | 156 |
| Confessions | 100 268 240 | 102 | 186 |
| , Recording of | 240 176 | 161 | 157 |
| Confession of co accused | 366 | 100 105 | 188 |
| Consent | 70 | 102 103 165, 166 | -33 |
| Conspiracy | | | |

ል 172

10)

173

161 162

155

150

197

1

Conveying persons by water

in unsafe vessel Convicted criminal Prisoner

Contempt

INDEZ

| 494 | * | CRIMINAL I | PLEADING® | |
|----------|---------------------|------------|--------------------------------|---------|
| Subject | | Page | Subject | Page |
| Sec | 511 | 199 | Definitions | 5 |
| | 1"0 | 200 | Delivery of goods sold | 367 |
| | 61 167 | 200 | Demurrer | 64 |
| | 964 | 201 | Deserter concealment of | 8 |
| | 337 | 906 | Desertion | 367 |
| | 401 | 206 | Destructive Insects and | |
| | 2,0 | 211 | Pests Act | 10 |
| | 169 1"3 | 211 | Difference between High | |
| | 10" 142 | 912 | and Mofussil Court procedi | ure 305 |
| | 10 144 | 213 | Diary | 186 |
| | 54 5 ₃ | 214 | Dict and Travelling | |
| | 497 | 215 | Allowance of witnesses | 197 |
| | 99 85 | 216 | Disaffection | 367 |
| | 51 | 217 | Dishonestly | -7 |
| | 171 | 221 | making false claim | 36 |
| Crimina | l Revision | 290 | Disputes connected with | |
| | l Trespass | 9 51 | land or water | 919 |
| Crimina | | 18. | District | 367 |
| | l Tribes \ct | 10 | District Magistrate | 367 |
| Crimino | | 109 | Disturbing religious assembly | 42 |
| | samination | 100 | Documents | 367 |
| Crown v | | 206 | . Destruction of | 34 |
| | e homicide | 43 | Dramatic Performances 1ct | 10 |
| Currence | | 173 | Drug sale of | 39 |
| | v notes and Bank | | Drunkenness | 63 "8 |
| notes | offence relating to | 9 . | Due care and attention | B |
| Custody | - | 367 | Dying Declaration | 102 |
| Custom | | 1 | E | |
| | n | | _ | _ |
| | _ | | Elections Bribery at | 9 |
| Dacoity | | 43 | " Palse statements in | |
| | s by the | | connection with | 9 |
| | lrolock class | 175 | Elect ons Offences 1ct | 10 9 |
| Dafadar | | 367 | personating at | 9 |
| Daily fi | | 307 | undue influences at | υ |
| | in navigation | 39 | Endangering life or | 4.5 |
| | or obstruction in | ! | personal safety | 43 |
| | ic way | 39 | Escape of prisoners from jails | 190 |
| Desth | | 5 36" | or station lock ups | 5 |
| Declara | | 10 52 76 | Enmity between classes | 10 |
| Defamat | | 57 | Lpi lem e Diseases \ct | 222 |
| | Evidence | | European Brttish Subject | 367 |
| | Lyidence | 67 1 | European Drusa Sauject | 001 |
| | | | | |

| INDEX | | | |
|--------------------------------|------------|---|-----------|
| Subject | Page | Subject | Page |
| European Deserters \ct | 10 | Filse Personation | 34 |
| European Vagrancy Act | 10 | False Statement in connec | |
| Evidence | 367 | tion with election | 9 |
| Evidence 1ct S 33 | 102 | False Trade Description | 308 |
| Evidence Act S 25 | 177 | Falsification of Accounts | 52 |
| ,, 159 | 177 | Fees | 233 |
| , 14 | 177 | Fees for affidavit | 237 |
| , 14o 161, 193 | 197 | Fees in Municipal Magistrate | s |
| , 24 to 28 | 204 | Court at Calcutta | 237 |
| Evidence Causing disappeara | nce 33 | Ferry | 369 |
| Evidence of Association | 176 | Feudatory Officials | 215 |
| Evidence cases of no | 98 | Fictitious stamp | 368 |
| " Criminal Special | | Filing of complaint | 237 |
| rules of | 96 | Final Report under Sec | |
| Evidence in one case cannot | | 173 Cr P C | 267 |
| be imported into another | 98 | Fine | 5 |
| Evidence, Law of | 93 | Fire Arms used or unused | |
| Evidence Mode of recording | 242 | rmmunition | 196 |
| Examination in chief | 367 | First Information | |
| , of accused | 245 | Report | 258 |
| , of Complainant | 2.9 | First offenders | 3 202 |
| Excisable article | 367 | | 10 |
| Excise let | 10 | | 196 |
| Fxcise Officer | 36- | Force | 368 |
| Exhibition of false light mark | 39 | Foreign Army | 12 |
| Expert Evidence | 103 | , Kings | 12 |
| Explosive Substance | 36" | Foreigners | 57 |
| Exposure and abandonment | | Forfesture of Property | 5 |
| of child | 43 | | *** |
| Extortion | 9 49 | or signature | 196 51 |
| Extradition offence | J€7 | | 35 |
| F | | Fouling of water Fraudulent claim of | 33 |
| = | 0.25 | property | 3, |
| Fabricating false evidence | 36" 36" | Fraudulent Deed and | ", |
| Fact in issue | 3(3U | Insposition of property | ŋ |
| Factories Act | 10 | Fraudulently | 365 |
| Tactors | 31 - | Fru lukntly obtaining | |
| Talsa Charge | 3 | le rec for sum not due | , |
| False Clum | 31 | Fraudulently suff ring decree | |
| Talse Evidence | 2, 23 | | ٠, |
| Talse Information | 1 | Friu li lent removal or | |
| Talse Light mark | 39 | concerlment of Property | , |
| . 5 | | | 1 |
| | | | |

| Subject | Page] | Subject | Page |
|---------------------------|--------|------------------------------|---------|
| _ | - 1 | House search | 190 |
| O | | Hoisting of red flag | 181 |
| Gaming | 368 | Honest belief | 13 |
| Gang Case | 176 | Hostile witness | 108 |
| Ganja | 368 | House trespass | 368 |
| General Fxceptions | 6 | Hue and cry notices | 19 |
| General principles of | | Hurt | 9 44 45 |
| Criminal Law | 12 | voluntarily causing | 3~2 |
| Giving false evidence | 9 | Grievous voluntarily | |
| Glanders and Farcy Act | 10 | causin | 3 7 |
| Golden rules | 109 | Hut | 309 |
| Good faith | 368 | | |
| character | 199 | I | |
| Goods | 368 | Identifying Parade | 217 |
| Goonda Act | 189 | Ignorance of Law | 6.5 |
| Govt of India | 368 | Ignorance or mistake of fact | 65 |
| Govt Primary duty of | 5 | Illegal | 363 |
| Government currency note | 1.3 | Illegal gratification | 8 |
| Government Currency note | 368 | Illicit Intercourse | 368 |
| Governor General etc | 303 | Immoral Traffic Act | 11 |
| Assaulting | 8 | Immovable Property | 2 8 280 |
| Gratification | 364 | Imprisonment | 309 |
| Gricrous hart | 368 | Imprisonment in default | |
| Guardians | 308 | of fine | 79 |
| | 500 | Indian Arms Act | 190 |
| II | | Indian Penal Code | |
| Habeas Corpus | 286 | Sec 400 401 | 1~G |
| Habitable room | 368 | 3 9 380 & 457 | 177 |
| Habitual offender | 185 | 1~6 182 211 | 192 |
| , drunkard | 199 | 95 363 | 183 |
| Hackney carriage | 368 | | 195 |
| Hackney carriage Act | 10 | Indian States | 215 |
| Handcuffs | 221 | Infants | 58 |
| Handwriting proof of | 100 | Information and copies | 20 |
| Harbouring Descrier | 8 | Information of offences | |
| offender | 32 36 | intentional omission | |
| Health (Public) offences | | to give | 31 |
| relating to | 9 | Inherent Powers of High | 293 |
| High Court | 16 | Court | 213 |
| High Court Sessions Cases | 201 | Injury to unborn | 9 |
| His Magestry the Kin, | 0, | Chil Iren | 21 |
| Hol day | 231 | Interpretation of Law | 20) |
| House breaking | 368 | Institution of I rocced ngs | 237 |

| INDEZ | | | | |
|-----------------------------|---------|---------------------------|----------|--|
| Subject | Page | Subject | Page | |
| Injuring or defiling places | ,. | L | 2 | |
| of worship | 42 | _ | | |
| Injury | 369 | Land | 369 | |
| Inland Steam Vessels Act | 191 | Land or Water | 369 | |
| Inquiry | 369 | Larceny Act | 13 | |
| Inquiry into cases triable | | Lawful guardian | 363 | |
| by Court of sessions | 281 | Leading questions | 369 | |
| Insanity | 59, 79 | Legal Proceeding | 369 | |
| Intelligence Bureau | 197 | Legallybound | 79 | |
| Instrument of Gaming | 369 | Letter Bombs | 194 | |
| Intentional Insult or In | | License | 369 | |
| terruption to Public | | Lie Detector | 222 | |
| Servant | 37 | Life acts endangering | 45 | |
| Interpretation of law | 24 | offences affecting | 9 | |
| Intimidation | 10 | Likelihood of Breach of | | |
| Intoxicating Drug | 36 | the Perce | 212 | |
| Investigating officers | 186 | Limitation | 247 | |
| Issue, General | 69 | Liquor | 300 | |
| _ | | Local Inspection | 293 | |
| J | | Local Law | 15 10 | |
| Joinder of charges | 309 | Local Law Infringement | 10 | |
| Joining unlawful assem | | of | 11 | |
| bly | 31 | Losing wrongfully | 370 | |
| Judge | 369 | Lottery office | 41 | |
| Judicial officer Signature | 232 | Lunatic | 390 | |
| of Judicial proceeding | | Lurking House Trespass | 370 | |
| Judicial proceeding | 232 | M M | 310 | |
| Jurisdiction in gang cases | 308 | Magistrate | 3,0 | |
| Jurisdiction, want of | 67 | Viail Bag | 370 | |
| Juvenile offender | 369 | Mail robbery | 179 | |
| 5 avenue ouchder | 203 | Maintenance | 286 | |
| K | | Maintenance order | 3 0 | |
| Keeping of a lodging | | Making a fulse document | 370 | |
| house | 369 | Making noxious to health, | | |
| Keeper of a Sarai | 300 | atmosphere | 8ه | |
| Keeping Lottery office | 41 | Malignant act likely to | | |
| Kerosine | 300 | | a7 | |
| Kidnapping | 9 47 49 | | 208 | |
| King s Coin | 300 | 24 ·B- | 10 | |
| Knowledge | 60 | | 370 | |
| Known thief, ducoit or | | Menances of Length Act | 11 | |
| robber | 199 | Medical Aid | 217/ | |
| | | | | |

128

| 123 | CRIMITAL | PLEADI (US |
|---------------------------|------------|------------------------------|
| Subject | Page | Subject |
| Member of an unlawful | 2 00,0 | Offence aganist Pub |
| assembly | 8 | Justice |
| Mens rea | 6a | Offence relaing to coins |
| Metal Tokens Act | 11 | Offence committed 1 1 5 5 x |
| Military Grenades | 193 | more then one person |
| Mines Act | 71 | Offence relating to cur |
| Minor | 370 | rency note &c |
| Misappropriation | 370 | Offence relating t |
| Miscarriage | 9 43 | weights & measures |
| Mischief | . 50 | Offence against Public |
| Misjonider of charges | 303 | health etc |
| Month | 370 | Officer in charge of Police |
| Motor spirit | 3 0 | Statio |
| Motor vehicle | 370 182 | Officer of Police |
| Motor Vehicles Act | 1 | Official Secrets Act |
| Movable Property | 0 | Omission |
| Municipal Magistrate | 11 | Open courts |
| Murder | 9 43 80 | Opium |
| Musices Bones and | | Opium Act |
| Joints | 202 | Oral Evidence |
| | | Ordinary Powers |
| N | | P |
| Native Indian Subject | 6 | - |
| Negligence | 43 | Pachwan |
| Negligent Act likely to | | Pardon |
| spread infection | 37 | Passport Act |
| Negligent conduct | 39 40 | Penal Law Penal Servitude |
| regotiable Instrument | | |
| 1et | 1"3 | Person |
| on bailable offence | 3 0 | Photographic and |
| on cognisable ense | 370 | Criminal Intelligence |
| Not 1 royed | 3″0 3″0 | Bureau |
| Noxious food or drink | 37 | Place |
| unance Temporary or | 34 | Place of Inquiry or trial |
| Danger urgent coses of | 278 | Place of worship |
| 27 tilget utgent coves of | 2.5 | Plan |
| 0 | | Plea ler |
| Of scene nets an I songs | 11 | Plea ling |
| Ol seene books etc | 11 | |
| Obstruct ons on | _ | Io sons let |
| lirways let | 11 | Police |
| Offence | 219 | I olice custody |
| | | |



1"1

214

428

Airways Act

Offence

| Subject | Page | Sul ject | Page |
|-------------------------|---------|------------------------------|----------|
| Member of an unlawful | 2 uye | Offence aganist Public | ruje |
| assembly | 8 | | 9 |
| Mens rea | 6.0 | Offence relaing to coins etc | 9 |
| Metal Tokens Act | 11 | Offence committed by | · · |
| Military Grenades | 193 | | 87 |
| Mines Act | 11 | Inore men one person | 04 |
| Minor | 3 0 | | 9 |
| Misappropriation | 3 0 | ronoj noto tec | |
| Miscarriage | 9 43 | | 9 |
| Vischief | 50 | i morganico co inconstitus | • |
| Misjonider of charges | 309 | health etc | 9 |
| Month | 370 | Officer in charge of Police | , |
| Motor spirit | 370 | Station | 187 |
| Motor vehicle | 370 182 | Officer of Police | 370 |
| Motor Vehicles Act | 3/0 182 | Official Secrets Act | 11 |
| Movable Property | " 0 | | 1, 34 37 |
| Municipal Magistrate | - 11 | Open courts | 931 |
| Murder | 9 43 80 | Opium | 3 0 |
| Musices Bones and | 0 40 00 | Opium iet | 11 |
| Joints | 262 | Oral Evidence | 370 |
| N | 203 | Ordinary Powers | 3"0 |
| Native Indian Subject | | P | |
| Negligence | 6 43 | _ | 371 |
| Negligent Act likely to | 43 | Pardon | 206 |
| spread infection | 37 | | 11 |
| regligent conduct | 39 40 | Penal Law | 5 |
| \egotiable Instrument | 30 40 | Penal Servitude | 5 |
| Act | 173 | Person | 3"1 |
| on bailable offence | | Personaling at election | 9 |
| Non cognisable case | 30 | Photographic and | |
| Non cognisable offence | 301 | Criminal Intelligence | |
| Not proved | 370 | Bureau | 197 |
| oxious food or drink | 37 | Place | 371 |
| busance Temporary or | " | Place of Inquiry or trial | 2:0 |
| Danger urgent coses of | 2-8 | Place of worship | 42 |
| | | Plan | 908 |
| 0 | - 1 | Pleader | 247 |
| Obsecue acts and songs | 41 | Pleading | 67 |
| Obscene books etc | 41 | Pleas special in bar | 68 |
| Obstructions on | - 1 | Poisons let | 11 |
| | | | |

11 Police

249 Police custody

| Zadri | | | | |
|---------------------------|------------|------------------------------|------------|--|
| Subject | Fage | Subject | Page | |
| Police Incitement to | | Public Justice, offence | | |
| Disaffection | . 11 | agunst | 9 | |
| Police Officer | 371 | Public nuisances | 41 277 | |
| Police Reports | 257 | Public Prosecutor | 371 | |
| Police Station | . 371 | Public servant | 90 | |
| Political Agent | 215 | Public assaulting and | | |
| Possession | 371 | obstructing, contempt | | |
| Post Mortem Report | 260 | of the lawful authority | | |
| Presidency Magestite | 14, 15, 17 | of | 9 | |
| Presidency towns | 26 | Public servant disobeying | | |
| Press and Registration of | | Iaw . | 8 | |
| Books Act | 11 | Public servant negligently | | |
| Prevention of Cruelty to | 11 | suffering prisoner to | | |
| Animals Act | 11 | escape | 8 | |
| Prevention of Dourine | ** | Public servant, Persona- | | |
| Act Douring | 11 | tion of | 9 | |
| Prevention of Seditious | 11 | Public servant, taking | | |
| Meetings Act | 11 | gratification | 8 | |
| Previous convictions | . 88 | Public servant, unlaw- | | |
| Prisoner's Act | . 205 | fully engaged in trade . | 9 | |
| Private Defence | 89 | Punishment | 5 | |
| Privy Council | 14 | Purdanashin woman | 294 | |
| Process | 232 | | | |
| Proclaimed offender | 371 | Q | | |
| w . | 176 | Questioning the prisoner | 201 | |
| Professional drugging | | Questioning the per outer to | | |
| case . | . 179 | R | | |
| Promoting enmity between | | 1 | | |
| | 39 | Railway & River Police . | 190 | |
| _ | 66 | Rape . | 9, 48 | |
| | . 371 | Rash driving - | 38 | |
| Property, Marks offences | | Rash navigation | 39 | |
| relating to | 10 | Reasonable grounds for | 0.5 | |
| Prosecution in Presidency | | beheving in his guilt | 215 | |
| towns | . 26 | Reason to believe | 371 371 | |
| Procecution in Mofussil | 53 | Re-examination | 371 371 | |
| Prostitute | . 199 | Receiving Property taken | 5.1 | |
| Prostitution | | by wat | s | |
| Proved | . 371 | | 9 | |
| Public | 371 | | 3 | |
| I done Document | | | | |
| T motic Commons & and | | | | |
| Public holiday | 3,1 | 1 Transmitted Transmitter | | |
| | | | | |

430

| Subject | Page] | Subject P | азе |
|--|---|---|--|
| Religion offences relat | ł | Soldiers Weiting garb | |
| ing to | 10 | used by | 8 |
| Religions assembly | 49 | Stage Carriages 1ct | 11 |
| Religions feelings | 42 | Stamp offences relating to | 9 |
| Remand | 241 | State is injured | 8 |
| Revision | 290 | Statement before the | |
| Pigorous Impresonment | 5 | Police | 103 |
| Rioting | 91 8 31 | Stolen property | 50 |
| Riot ng cases | 209 | וטולו ביוויו ביוויו ויייוים | 371 |
| Robbery | 9 49 | Sub divis onal Magistrate | 371 |
| Rope | 291 | Subordinate Magistrate | 371 |
| • | | Suicide | 43 |
| s | | Summary cases | 283 |
| Sale of noxious food | 37 | Summons cases | 231 |
| Salt Act | 11 | | |
| Sanction | 280 | But ventable register | 199 |
| Search Act | 11 | Suspicious character | 199 |
| Search | 189 | Suspects | 218 |
| Warrants | 18 | | |
| Secondary Evidence | 371 | Ţ | |
| Security for keeing the | | Temporary orders in | |
| | | | |
| Peace | 29 | urgent cases of | |
| | _ | urgent cases of | 2 3 |
| Peace | 2° 20 290 | urgent cases of nussance Territorial Divisions | 14 |
| Peace Security for good | _ | urgent cases of nusance Territorial Divisions | 14 43 |
| Peace Security for good behaviour Sedition Sentence | 20 290 8 17 | urgent cases of nussance Territorial Divisions Theft Thoras | 14 43 26? |
| Peace Security for good behaviour Sedition Sentence Separate Sentern | 20 290 8 17 91 | urgent cases of nusance Ternitorial Divisions Theft Thorax Thug | 14 43 26° 371 |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report | 20 290 8 17 91 264 | urgent cases of nussance Territorial Divisions Theft Thorax Thug Trade Mark | 14 43 26° 371 |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report Sess one Case | 20 290 8 17 91 | urgent cases of numance Territorial Divisions Theft Thorax Thoug Trade Mark Trade offences relating to | 14 43 26° 371 10 |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report Sess one Case Whether can be heard | 20 290 8 17 91 264 281 | urgent cases of numsance Territorial Divisions Theft 9 Thorax Thug Trade Mark Trade offences relating to | 14 43 26° 371 10 10 |
| Peace Security for good behaviour Seditton Sentence Separate Sentern Serologist a Report Sess ons Case Whether can be beard to Magistrate Court | 20 290 8 17 91 264 281 | urgent cases of urusance Territorial Divisions Theft Thorax Thug Trade Mark Trade Offences relating to Transaction same Transportation | 14 43 26° 371 10 10 309 5 |
| Peace Security for good behaviour Sedution Sentence Separate Sentern Serologist a Report Sess one Case Whether can be heard in Magistrate Court Sessions Durs on | 20 290 8 17 91 264 281 309 371 | urgent cases of musiance Territorial Divisions Theft Thorax Thorax Thug Trade offences relating to Transaction same Transportation Trespass | 14 43 267 371 10 10 509 5 |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report Sess one Case Whether can be heard in Magistrate Court Sessions Divis on shall Presume | 20 290 8 17 91 264 281 309 371 371 | urgent cases of urusance Territorial Divisions Theft Thorax Thug Trade Mark Trade Offences relating to Transaction same Transportation | 14 43 26° 371 10 10 309 5 |
| Peace Security for good behaviour Seduton Sentence Separate Sentern Serologist a Report Sess one Case Whether can be heard in Magistrate Court Sessions Divis on Shall Presume Signal at night | 20 290 8 17 91 264 281 309 371 371 184 | urgent cases of numbance Territorial Divisions Theft Thorax Thorax Thug Trade offences relating to Transaction same Transportation Trespass Trespassung or burnal places | 14 43 267 371 10 10 509 5 |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report Sess one Case Whether can be heard in Magistrate Court Sessions Diris on Shall Presume Segoal at night in day time | 20 290 8 17 91 264 281 309 371 371 | urgent cases of numbered printing and pristons Theft Thorax Thug Trade Murk Trade offences relating to Transaction same Transportation Tresposs Trespossing or burnal places | 14 43 267 371 10 10 509 5 |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report Sess ons Case Whether can be heard in Magstrate Court Sessions Diris on thall Presume Signal at night in day time | 20 290 8 17 91 264 281 309 371 371 184 124 | urgent cases of musance Territorial Divisions Theft Thorat Thorat Thug Trade Jirk Trade offences relating to Transaction same Transportation Trespass Trespassing or burnal places U UIndue influence | 14 43 26° 371 10 10 309 5 51 4° |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report Seas on Case Whether can be heard in Magistrate Court Sessions Divis on thall Presume Signal at night in day time Signature of Judicial officer | 20 290 8 17 91 264 281 309 371 371 184 124 | urgent cases of numbance Territorial Divisions Theft Thorax Thorax Thug Trade offences relating to Transaction same Transportation Trespass Trespassing or burnal places U Undue influence Unlawfall assembly 8 30 31 91 | 14 43 26° 371 10 10 309 5 51 4° |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist's Report Sess ons Case Whether can be heard to Magistrate Court Sessions Divis on thall Presume Signal at night in day time Segnature of Judicial officer Simple Imprisonment | 20 290 8 17 91 264 281 309 371 371 184 124 23° 5 | urgent cases of numsance Territorial Divisions Theft 9 Thorax Thug Trade Offences relating to Transaction same Transportation Tresposs Trespassing or burial piaces U Undue influence Unlawful assembly 8 30 31 91 Unlawful assembly 8 30 31 91 Unlawful assembly 8 bons | 14 43 26° 371 10 10 309 5 51 4° |
| Peace Security for good behaviour Sedution Sentence Separate Sentern Serologist a Report Sess one Case Whether can be heard in Magistrate Court Sessions Divis on bhall Presume Signal at night in day time Separative of Judicial officer Simple Imprisonment Special Plea in Bar | 20 290 8 17 91 264 281 309 371 371 184 124 23° 5 | urgent cases of musance Territorial Divisions Theft Thorat Thorat Thag Trade Jirk Trade offences relating to Transaction same Transportation Trespassing or burial places U Uindue influence Unlawful assembly 8 30 31 91 Unlawful assembly 8 none a member of 30 | 14 43 26° 371 10 10 309 5 51 4° |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report Sess one Case Whether can be heard to Magistrate Court Sessions Divis on thall Presume Signal at night in day time Signature of Juducial officer Simple Imprisonment Special Law | 20 290 8 177 91 264 281 309 371 371 184 124 23° 5 68 10 | urgent cases of musiance musiance Territorial Divisions Theft 9 Thorax Thug Trade Offences relating to Transaction same Transportation Trespassing or burial places U Under inducence Unlawful assembly 8 30 31 91 Unlawful assembly being a mether of Unnatural offence 30 Unnatural offence | 14 43 26° 371 10 10 809 5 51 4° 9 2°7 |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report Seas one Case Whether can be heard in Magistrate Court Seasons Divis on thail Presume Signal at night in day time Sugnatare of Judicial officer Simple Imprisonment Special Law Speci | 20 290 8 17 91 264 281 309 371 371 184 124 23° 5 68 100 3 1 | urgent cases of nuisance Territorial Divisions Theft Thorax Thug Trade offences relating to Transaction same Transportation Transportation Transportation Transportation Transportation Uladue influence Unlawful assembly 8 at 31 01 Unlawful assembly being a member of Unnatural offence Using a files property mark | 14 43 26? 371 10 10 309 5 51 4? 9 277 |
| Peace Security for good behaviour Sedition Sentence Separate Sentern Serologist a Report Sess one Case Whether can be heard to Magistrate Court Sessions Divis on thall Presume Signal at night in day time Signature of Juducial officer Simple Imprisonment Special Law | 20 290 8 177 91 264 281 309 371 371 184 124 23° 5 68 10 | urgent cases of musiance musiance Territorial Divisions Theft 9 Thorax Thug Trade Offences relating to Transaction same Transportation Trespassing or burial places U Under inducence Unlawful assembly 8 30 31 91 Unlawful assembly being a mether of Unnatural offence 30 Unnatural offence | 14 43 26? 371 10 10 309 5 51 4? 9 277 |

| | INDEX | 431 |
|--|---|--------------------------------|
| | 2 age / Cit-jee- | Page |
| Unttering words with intent to wound religious feelings | Waging War Concealing 42 with intent of Wandering gangs | 8 179 |
| Vaccination Vet Valuable security Vakalatnama Vagranis with no fixed residence Verification Legylity of Verification of confession Vesed Village Choukidars Crime Vote Book Voluntarily Voluntarily Voluntarily causing hurt | War or depredation property taken by Warrant cuses Warship Wernons Weights and Measures offinees relating to Will Birds and Animals Act Witness Hostile Witness Hostile Withdrawal from Prosecution | 11 |
| Voluntarily causing grievous hurt | 3 ? Workmen's Compensa- | 11 |
| W Raging War against Shatic Power Raging War against sovereigt collecting men arms ammunitions for | At toughter accessmit mit | 372 67 372 372 372 |



